



Bruhat Bengaluru Mahanagara Palike

Road Infrastructure – East Division

18th Floor, Netaji Subashchandra Bose Building, M.G. Road,
Bengaluru – 560001, Email: rieastdivisionbbmp@gmail.com

TENDER FOR THE WORK OF

“Construction of Elevated Rotary Flyover at IOC Junction and Construction of additional 2 Lane ROB at Baiyyappanahalli Railway Level Crossing” on Lumpsum, Turnkey with allowable Price Escalation basis – Call – 3.

Amount Put to Tender : 30406 Lakhs

Short Term Tender Notification

Two cover system

(Through GOK, <http://kppp.karnataka.gov.in> only)

TENDER REFERENCE No	:	EE/RI/EAST/TEND/04/2025-26 Dated: 09.05.2025
TENDER DOCUMENT CAN BE DOWNLOADED FROM KPP PORTAL FROM	:	12.05.2025 17.30 hours onwards
PRE BID MEETING	:	23.05.2025 16.00 hours
LAST DATE AND TIME FOR RECEIPT OF TENDERS	:	05.06.2025 16.00 hours
TIME AND DATE OF OPENING OF TECHNICAL TENDERS	:	06.06.2025 16.30 hours
TIME AND DATE OF OPENING OF FINANCIAL TENDERS	:	Will be intimated after obtaining approval for Technical Evaluation.
ADDRESS FOR COMMUNICATION	:	Office of the Executive Engineer, Road Infrastructure – East Division 18 th Floor, Netaji Subashchandra Bose Building, M.G. Road, Bengaluru – 560001, Email: rieastdivisionbbmp@gmail.com

Contents

Section No.	Description	Page No.
1	Short Term Tender notification	3-5
2	Instructions to Tenderers (ITT)	6-18
3	Qualification Information	19-21
4	Format for Bankers Certificate	21
5	Forms of Tender, Letter of Acceptance, Notice to Proceed with the Work and Agreement Form	22-25
6	Conditions of Contract (CC)	26-49
7	List of organizations who are considered as appointing authority for appointment of arbitrators	50
8	Intermediate Payments- Schedules	51-52
9	Scope of Work and Design Criteria	53-90
10	Contract Data	91-98
11	Specifications	99
12	Drawings	99
13	Format of Bank Guarantee for Performance Security	100
14	General Notes	101-102
15	Form of Financial Bid	103-104
16	Technical Specifications for Steel Structures	105-183
17	MORTH Supplementary Technical Specifications	184-223



BRUHAT BENGALURU MAHANAGARA PALIKE

Office of the Executive Engineer, Road Infrastructure – East Division,
18th Floor, Netaji Subashchandra Bose Building, M.G. Road,
Bengaluru – 560001. Email: rieastdivisionbbmp@gmail.com

No. EE/RI/EAST/TEND/04/2025-26

Dated: 09.05.2025

Short Term Tender Notification

INVITATION FOR TENDER (IFT)

(Through <http://kppp.karnataka.gov.in> only)
(Two Cover System)

1. The Executive Engineer, RI-East Division, BBMP, Bengaluru invites tenders from eligible Contractors registered in Bruhat Bengaluru Mahanagara Palike or equivalent registration with CPWD / KPWD / Railways / MES / National Highway or any State Government Organizations for the construction of works detailed in the table below. The tenderers may submit tenders for works given in the table through kpp portal of the Government of Karnataka (<http://kppp.karnataka.gov.in>). The Tenderers are advised to note the minimum qualification criteria specified in Clause 3 of the Instructions to Tenderer's to qualify for award of the contract (Standard Tender Document – KW-4 and KTPP Act shall be followed).
2. Tenders must be accompanied by Earnest Money Deposit (EMD) specified for the work in the table below. Earnest money deposit will have to be in any one of the forms as specified in the Tender document any errors in the EMD shall be liable for rejection and shall have to be valid for 45 days beyond the validity of the tender.
3. Tenders must be submitted online through kpp portal on or before **16.00** hours on **05.06.2025** and the opening of tenders will be as per the kpp portal guidelines.
4. Tender documents and other information can be downloaded in the kpp portal from **12.05.2025 @ 17.30 hours onwards**.
5. GST of 18% or as applicable at the time of payment shall be paid to the tendered amount separately.
6. Other details can be seen in the tender documents.

Sl. No	Name of the Work	Amount put to tender (in lakhs)	EMD (in Lakhs)	Cost of Tender Document	Period of Completion
1.	“Construction of Elevated Rotary Flyover at IOC Junction and Construction of additional 2 Lane ROB at Baiyyappanahalli Railway Level Crossing” on Lumpsum, Turnkey with allowable Price Escalation basis	30406.00 (Excluding GST)	305.00 Lakhs (Rs.1.00 Lakh through kpp portal and Rs.304.00 Lakhs in the form of BG / e- Bank Guarantee)	As per kpp Portal	36 Months (Including Monsoon)

Following shall be the calendar of events for Tendering:

Availability of Tender documents	:	12.05.2025 17.30 hours onwards
Pre bid meeting	:	23.05.2025 16.00 hours
Last Date & Time for receipt of tenders	:	05.06.2025 16.00 hours
Date & Time for Opening of Technical Bid	:	06.06.2025 16.30 hours
Date & Time for Opening of Financial Bid	:	(Will be intimated after obtaining approval for Technical Evaluation)

Note:

- A. The bid must be submitted in the electronic tendering system only. The bid containing details of their capability to undertake the tender and scope of service to be carried out, this will be considered.
- B. Contractor can access tender documents on the website, fill them and submit the completed tender document into electronic tender on the website after submitting the EMD and tender processing fee in the form of e-payment. EMD of the unsuccessful bidders will be refunded only after issuing LOA to the successful bidder.
- C. Bidder should attach all the scanned copies of certificates pertaining to their eligibility criteria, qualification information documents, failing which the bid will not be considered. No physical documents shall be considered. (Also all scanned copies should be visible and should have clarity). IT returns and its year wise abstract should be certified by Chartered Accountant.
- D. Any effort by the bidder to influence the client in the bid evaluation, bid comparison or contract award decision results in rejection of the consultants bid.
- E. The Financial Bid is to be read, for the purpose of pricing, in continuation with the Instructions to Tenderers, Conditions of Contract, Scope of Work, Design Criteria, Specifications, Drawings and all other Components are Parts of the Tender Document.
- F. A successful bidder will have to execute an agreement with Executive Engineer, RI - East Division, BBMP Bengaluru within 3 days upon receipt of intimation along with performance Security as per contract price in form of Bank Guarantee obtained from a Nationalized Bank / Scheduled Bank payable at Bengaluru. The work shall be commenced with all earnestness within seven days from the date of issue of work order, failing in such cases the performance security will forfeited which it would be presumed that he is not interested in the work and action will be taken to get the work executed through alternate agency.
- G. The Bruhat Bengaluru Mahanagara Palike, Bengaluru reserves the right to accept / reject any or all tenders without assigning any reasons.
- H. Corrigendum's / modifications / corrections, if any, will be published in the kpp website only. The documents uploaded in the portal shall be treated as final, if any information mentioned in the original notification found false should be ignored.
- I. Further details of the work of the tender can be obtained in the office of the Office of the Executive Engineer, Road Infrastructure – East Division, 18th Floor, Netaji Subashchandra Bose Building, M.G. Road, Bengaluru – 560001, Email: rieastdivisionbbmp@gmail.com on all working days.
- J. GOK kpp portal <http://kppp.karnataka.gov.in> for registration and e-payment details contact kpp portal Helpdesk at 080 — 46010000, 68948777.
- K. All drawings uploaded in the GOK kpp portal is tender purpose only mentioned elsewhere in the drawing / tender document as final and approved must be considered as tender purpose only.

Sd/-
Executive Engineer,
RI-East Division
Bruhat Bangalore Mahanagara Palike

Copy Submitted for kind information to the:

1. Personnel Assistant to Hon'ble Chief Commissioner to bring into the kind notice of The Hon'ble Chief Commissioner.
2. Special Commissioner (Projects)/ Additional Commissioner (Projects), BBMP.
3. Engineer – in Chief BBMP for kind information.
4. Joint Commissioner East Zone for kind information.
5. Chief Engineer RI for kind information.
6. Superintending Engineer, Road Infrastructure for kind information.
7. The CAO / Chief Auditor for kind information.
8. I.T. Advisor with a Request to publish the same in the BBMP Website.
9. Public Relation Officer, BBMP to publish in two leading Newspapers in Kannada and English and also to publish the same at National Level.
10. Notice board.
11. Office Copy.

Sd/-
Executive Engineer
RI - East Division
Bruhat Bangalore Mahanagara Palike

SECTION 2: INSTRUCTIONS TO TENDERERS (ITT)

Table of Clauses

A.	General	Page No.
1.	Scope of Tender	7
2.	Eligible Tenderers	7
3.	Qualification of the Tenderer	7-8
4.	One Tender per Tenderer	9
5.	Cost of Tendering	9
6.	Site Visit	9-10
B.	Tender Documents	
7.	Content of Tender Documents	11
8.	Clarification of Tender Document	11
9.	Amendment of Tender Documents	11
C.	Preparation of Tenders	
10.	Documents Comprising the Tender	11
11.	Technical Bid	11-12
12.	Financial Bid	12
11.	Tender Prices	12
12.	Tender Validity	12
13.	Earnest Money Deposit	13
14.	Format and Signing of Tender	14
D.	Submission of Tenders	
15.	Sealing and Marking of Tenders	14
16.	Deadline for Submission of Tenders	15
17.	Late Tenders	15
18.	Modification and Withdrawal of Tenders	15
E.	Tender Opening and Evaluation	
19.	Opening of First Cover of All Tenders and Evaluation to Determine Qualified Tenderers	15
20.	Opening of Second Cover Tenders of Qualified Tenders and Evaluation	15
21.	Process to be Confidential	16
22.	Clarification of Tenders	16
23.	Examination of Tenders and Determination of Responsiveness	16
24.	Correction of Errors	16
25.	Evaluation and Comparison of Tenders	17
F.	Award of Contract	
26.	Award Criteria	17
27.	Employer's Right to accept any Tender and to reject any or all	17
28.	Notification of Award and Signing of Agreement	17
29.	Performance Security	18
30.	Advance Payment	18
31.	Corrupt or Fraudulent Practices	18

A. General

1. Scope of Tender

- 1.1 The Bruhat Bengaluru Mahanagara Palike (BBMP), The Executive Engineer, Road Infrastructure – East Division, 18th Floor, Netaji Subashchandra Bose Building, M.G. Road, Bengaluru – 560001, Email: rieastdivisionbbmp@gmail.com (Referred to as Employer) invites Tenders following Two Cover Tender Procedure, from the Eligible Tenderers, for the Construction of Elevated Rotary Flyover at IOC Junction and Construction of additional 2 Lane ROB at Baiyyappanahalli Railway Level Crossing” on Lumpsum, Turnkey with allowable Price Escalation basis. The Tenderers may submit Tenders for the above Work.

2. Eligible Tenderers

- 2.1 Tenderers shall not be under a Declaration of Ineligibility for Corrupt and Fraudulent Practices issued by the Government of India / Union territory or any State Government.
- 2.2 Tender from Joint Ventures / Consortia are not acceptable.
- 2.3 Tenderer of certain countries are restricted on Public Procurement and refer proceedings of the Government of Karnataka order No FD 455 Exp - 12 2020 Bengaluru dated 1/4/2023 is annexed at last in the Tender document.

3. Qualification of the Tenderer

- 3.1 All Tenderers shall provide the requested information accurately and sufficient details as mentioned in Section 3: Qualification Information.
- 3.2 To qualify for award of this Contract, each Tenderer in its name should have in the last five years 2019 – 2020 to 2023 – 2024 i.e.
- a. Achieved in at least in two Financial Year a minimum Financial Turnover (in all classes of Civil Engineering Construction Works only) of **Rs. 30406.00 Lakh**. Further, the Financial Turnover of the Previous Years shall be given a Weightage of 10% per year to bring them to the Price Level of the financial year in which the tender is invited i.e. 2024 – 25.
 - b. The Prime Contractor should have satisfactorily completed not less than 90% of Contract Value i.e. At least one similar work such as construction of a Flyover constructed on major road of length not less than 1000m including approaches with value of work of **Rs. 15203.00 Lakhs** and same shall have been opened to traffic. The Tenderer should submit Work Done Certificate issued by not below the Rank of the Executive Engineer and Certificate issued by other than government organization shall not be considered. Further Tenderer should submit proof of receipt of payment received for the work only from the respective Government Authority for similar nature of work. The Value of the Completed Works shall be given a weightage of 10% per year to bring them to the Price Level of 2024 – 25.

- c. Executed in any one Year, the following minimum Quantities of Work.

The tenderer should submit the certificate issued by not below the rank of Executive Engineer in support of minimum quantity executed. Certificate issued by other than government organization shall not be considered under this category.

Sl. No	Description	Unit	Quantity
1	Earth work Excavation / Embankment / Construction median/Filling available earth	Cum	8810
2	Construction of GSB/WMM	Cum	2618
3	BM/DBM/BC	Cum	1019
4	Concrete Works of all grade	Cum	20858
5	TMT Steel	MT	2105
6	HT Strands	MT	286

- d. Tenderer should submit a certificate of minimum 680 MT of structural steel supplied / fabricated and launching of Girders for on-going or completed Bridge work in a single project awarded by any State/Central Government during last 5 years 2019 – 2020 to 2023 – 2024. Further the certificate of quantities included in a project should be certified by not below the rank of Executive Engineer along with approved drawings.

3.3 Each Tenderer should further demonstrate

- a. Availability by owning at least 50% of the following Key and Critical Equipment for this Work and the remaining 50% can be deployed on lease / hire basis for all Works provided the relevant Documents (Commitment Agreement, etc.) for Availability for this Work are furnished.

Sl. No	Description	Requirement	Own	Hire
1	Concrete Batching Plant and allied Equipment such as Transit Mixer 4 TO 7cum capacity), Concrete Pump, Vibrator, etc. (50 cum / hr.)	2 No	1	1
2	Screed vibrators, vibrators of needle, Generator, welding set	2 No	1	1
3	Hydrostatic Paver with Sensor Control of 9m wide Arm	1 No	1	-
4	Crane 50T Capacity	2 No	-	2
5	Hydraulic Rotary Rig of minimum 1000mm diameter	2 No	-	2
	Hot Mix Plant 100 – 120 TPH Capacity	1 No	1	-
7	Portal/mobile crane of 10T capacity	1 No	1	-
8	Compressors of adequate capacity for riveting	4 No	2	2
9	Oxy-Acetylene gas cutting	4 No	2	2
10	Radial drilling machine adequate capacity to drill 50mm dia hole	4 No	2	2
11	Hitachi	6 No	3	3
12	Tippers	10 No	5	5
13	Backhoe Loaders	6 No	3	3
14	Dozers	2 No	1	1
15	Wheel loaders	2 No	-	2
16	Diamond Cutter	2 No	-	2
17	Pulverizer	2 No	-	2

- b. Liquid Assets and / or availability of Credit Facilities of no less than **Rs. 10501.00** Lakh (Letter of Credit from Nationalized / Scheduled Bank for meeting the Fund Requirement, etc.).
- c. In the case of the death of a Contractor after executing the Agreement / Commencement of the Work, his Legal Heir, if an Eligible Registered Contractor and willing, can execute and complete the work at the accepted Tender Rates irrespective of the Cost of the Work.

3.4 Tenderers having In – house Design Office or associated with Consultancy Firms shall furnish the Details of the Design Experience of the Tenderer or the Consultancy Firm in the Design of Flyover/ROB/Major Bridge. In case the Tenderer is associating with a Consultancy Firm, Company Profile, Acceptance Letter along with Memorandum of Understanding (MOU) for Association along with experience certificate in similar nature of work of design consultancy cost not less than 0.50 percent of the Amount Put to Tender issued by not below the rank of Executive Engineer shall be uploaded in the tender.

The Employer shall have the right to verify all the Men and Machinery Details / Documents submitted by the Tenderer at any point of time during Technical Evaluation of the Tender Document.

- 3.5 To qualify for the Contract for which Tenders are invited in this IFT, the Tenderer must demonstrate having Experience and Resources to meet the Aggregate of the Qualifying Criteria for the Contract.
- 3.6 Sub Contractors' Experience and Resources shall not be taken into account in determining the Tenderers Compliance with the Qualifying Criteria.
- 3.7 Tenderers who meet the above specified minimum Qualifying Criteria, will only be qualified, if their available Tender Capacity is more than the total Tender Value. The available Tender Capacity will be calculated as under.

$$\text{Assessed available Tender Capacity} = (A * N * 1.5 - B)$$

Where

A = Maximum Value of Civil Engineering Works executed in any One Year during the last Five years (updated to 2023 – 2024 Price Level) taking into account the Completed as well as Works in Progress.

N = Number of years prescribed for Completion of the Works for which Tenders are Invited i.e. 36 Months.

B = Value, at 2023 – 2024 Price Level on 10% Weightage per annum, of Existing Commitments and On Going Works to be completed during the next 36 months.

Note: The Statements showing the Value of Existing Commitments and on Going works as well as the Stipulated Period of Completion remaining for each of the Works Listed should be countersigned by the Employer in charge, not below the Rank of an Executive Engineer or equivalent.

- 3.8 Even though the Tenderers meet the above Criteria, they are subject to be disqualified if they have
 - Made Misleading or False Representations in the Forms, Statements and Attachments submitted in Proof of the Qualification Requirements; and / or
 - Record of Poor Performance such as Abandoning the Works, not properly completing the Contract, Inordinate Delays in Completion, Litigation History, or Financial Failures etc.; and / or
 - Participated in the previous Tender for the same Work and had quoted unreasonably High Tender Prices and could not furnish rational justification.
 - During technical evaluation / verification, statement and calculations furnished in support of bid capacity found false such tenders shall be treated as non response.

4. One Tender per Tenderer

- 4.1 Each Tenderer shall submit only one Tender for the Project. A Tenderer who submits or participates in more than one Tender (other than as a Sub Contractor or in cases of alternatives that have been permitted or requested) will cause all the Proposals with the Tenderer's Participation to be disqualified.

5. Cost of Tendering

- 5.1 The Tenderer shall bear all Costs associated with the Preparation and Submission of his Tender, and the Employer will in no case be Responsible and Liable for those Costs.

6. Site Visit

6.1 The Tenderer shall, prior to submitting his Tender for the Work, visit and examine the Site of Works and its surroundings at his own expense and obtain and ascertain for himself on his own responsibility all information that may be necessary for preparing his Tender and entering into the Contract, including, inter alia, the actual Conditions regarding the Nature and Conditions of the Site, Availability of Materials, Labour, probable Sites for Labour Camps, Stores, etc. and the Extent of Lead and Lift required for the Work in complete form over the entire duration of the Contract, Restrictions, Obstructions in Work, if any, allow for all such Extras likely to be incurred due to any such Conditions, Restrictions, Obstructions, etc. in the quoted Tender Price for the Work.

6.2 In addition, the Tenderers shall also satisfy themselves about the following other Factors.

- a. Site Conditions including Access to the Site, Existing and Required Roads and other Means of Transport / Communication for use by him in connection with the Work including Diversion and Rerouting of Services.
- b. Ensuring that the Traffic Movement during the Construction of the Works is properly diverted, maintained and obstruction to the Traffic Movement is kept to the minimum during various Stages of Construction as planned and approved by the Employer. The tenderer shall bear the cost of men and materials for the diversion work.
- c. Requirement and Availability of Land and other Facilities for his enabling Works, Colonies, Stores and Workshops, etc.
- d. Ground Conditions including those bearing upon Transportation, Disposal, Handling and Storage of Materials required for the Work or obtained there from.
- e. Source and Extent of Availability of Suitable Materials including Water, etc. and Labours (skilled and unskilled), required for the Work and Laws and Regulations governing their Use and Employment.
- f. Geological, Meteorological, Topographical and other General Features of the Site and its Surroundings and are pertaining to and needed for the Performance of the Work.
- g. The Limit and Extent of Surface and Sub Surface Water to be encountered during the Performance of the Work and the Requirement of Drainage and Pumping.
- h. The Type of Equipment and Facilities needed, for and in the performance of the Work; and
- i. All other Information pertaining to and needed for the Work including Information as to the Risks, Contingencies and other Circumstances, which may influence or affect the Work or the Cost thereof under this Contract.

The Tenderers shall note that Information, if any, in regard to the Local Conditions, as contained in these Tender Documents, have been provided for Guidance and is not warranted being complete.

6.3 A Tenderer shall be deemed to have full Knowledge of the Site, whether he inspects it or not, and no extra charges consequent to any misunderstanding or otherwise shall be allowable.

6.4 The Tenderer and any of his Personnel or Agents will be granted permission by the Employer or his Authorized Nominee, on receipt of Formal Application in respect thereof a Week in Advance of the Proposed Date of Inspection of Site, to enter upon the Premises and Lands for Purpose of such Inspection, but only on the Express Condition that the Tenderer shall indemnify the Employer from and against all Liability in respect thereof and the Tenderer will be responsible for Personal Injury (whether fatal or otherwise), Loss or Damage to Property and any other Loss, Damage, Costs and Expenses however caused which, but for the Exercise of such Permission, would not have arisen.

B. Tender Documents

7. Content of Tender Documents

7.1 The Tender Document shall have all the Sections given in Page 2.

8. Clarification of Tender Documents

8.1 Refer Clause No. 8.2 below.

8.2 Pre Tender Meeting

8.2.1 The Tenderer or his Authorized Representatives are invited to attend a Pre Tender Meeting, which will take place at the Office of the Chief Engineer, Road Infrastructure/Engineer in Chief at Room No. 108, Annex-2 Building, 1st Floor, N.R. Square, Bengaluru - 560002 on **23.05.2025 at 16.00 hrs.**

8.2.2 The Purpose of the Meeting will be to clarify Issues and to answer Questions on any matter that may be raised at that stage.

8.2.3 The Tenderer is requested to submit any Questions in Writing or by Cable to reach the Employer not later than 22.05.2025 up to 16.00 hrs.

8.2.4 Minutes of the Meeting, including the Text of the Questions raised (without identifying the Source of Enquiry) and the Responses given will be displayed in the Website. Any Modification of the Tender Documents listed in Sub Clause 7.1 that may become necessary as a result of the Pre Tender Meeting shall be made by the Employer exclusively through the issue of an Addendum pursuant to Clause 9 and not through the Minutes of the Pre Tender Meeting and the same shall be displayed in the Website.

8.2.5 Non Attendance at the Pre Tender Meeting will not be a cause for Disqualification of a Tenderer.

9. Amendment of Tender Documents

9.1 Before the Deadline for Submission of Tenders, the Employer may modify the Tender Documents by issuing Addenda.

9.2 Any Addendum thus issued shall be part of the Tender Documents and shall be displayed in the Website.

9.3 To give the Tenderers reasonable time in which to take an Addendum into account in preparing their Tenders, the Employer shall extend as necessary the Deadline for Submission of Tenders, in accordance with Sub Clause 16.2 below.

C. Preparation of Tenders

10. Documents Comprising the Tender

10.1 The Tender submitted by the Tenderers shall contain the Documents as follows.

10.1.1 Technical Bid

- a. Earnest Money Deposit.
- b. Qualification Information as per Formats given in Section 3.
- c. Initial Program showing the General Methods, Arrangements, Construction Methodology, Order and Timing for all the Activities in the Work.
- d. List of Proposed Technical and Managerial Staffs to be deployed at Site for the Work.
- e. Number and Category of each type of Skilled Personnel to be deputed for this Work as per the Details

mentioned in the Clause No. 50 of Special Condition of Contract.

- f. Details of Plants and Machineries to be deployed at Site for the Work as per the Details mentioned in the Clause No. 51 of Special Condition of Contract.
- g. Proposed Construction Program on month – to – month basis for the entire Period of Execution of the Work as per the Details mentioned in the Clause No. 52 of Special Condition of Contract.
- h. Proposed Workshop Facility to be set up by the Tenderer as per the Details mentioned in Clause No. 53 of Special Conditions of Contract.
- i. Unpriced Bill of Quantities as per the Details mentioned in Clause No. 58 of Special Conditions of Contract.

10.1.2 Financial Bid

- a. The Tender (in the Format indicated in Section 4).
- b. Priced Financial Bid (Section 10); and any other Materials required be completing and submitting by the Tenderers in accordance with these Instructions. The Documents Listed under Sections 4, 7 and 10 shall be filled in without exception.

11. Tender Prices

- 11.1 The Contract shall be Turnkey Contract based on Tenderer's own Design for the Whole Works as described in Sub Clause 1.1.
- 11.2 The Tenderer shall fill in the Lump Sum Price (both in Figures and in Words) for the Whole Works. Corrections, if any, shall be made by crossing out, initialing, dating and rewriting.
- 11.3 The Price quoted by the Tenderer shall be for the Whole Works as noted in the Schedule, Specifications and elsewhere in this Document and shall hold good till the Completion of Work. Rate shall be inclusive of all taxes, all Taxes, Duties and Levies including Sales Tax, Municipal Taxes, Local Taxes, Octroi, ESI, all Royalties, Patent Rights, other Incidental Charges, etc., except GST. The Rate shall also include the Cost of all Labors, Materials, Plant, Machinery, Equipment's, Carriage and other Inputs involved in the Execution and Completion of the Work.
- 11.4 The Contractor will have to make his own Arrangements for Water, Electricity, Place for Storage of Construction Materials, Casting Yards, Labour Camps, etc. required for Construction and shall use his own Plant and Machinery, which may be required for the Speedy Execution of the Work.
- 11.5 During Traffic Diversion, the Contractor shall provide necessary Signages, Signals, Lighting Arrangements, etc. The Quoted Rate shall also be inclusive of Providing Skilled Personnel for Traffic Diversion as per the Requirements.

12. Tender Validity

- 12.1 Tenders shall remain valid for a period not less than one hundred and eighty (180) days after the Deadline Date for Tender Submission specified in Clause 16. A Tender valid for a Shorter Period shall be rejected by the Employer as Non Responsive.
- 12.2 In Exceptional Circumstances, prior to expiry of the Original Time Limit, the Employer may request that the Tenderers may extend the Period of Validity for a Specified Additional Period. The Request and the Tenderers' Responses shall be made in Writing or by Cable. A Tenderer may refuse the Request without forfeiting his Earnest Money Deposit. A Tenderer agreeing to the Request will not be required or permitted to modify his Tender, but will be required to extend the Validity of his Earnest Money Deposit for a Period of the Extension, and in compliance with Clause 13 in all respects.

13. Earnest Money Deposit

The Tenderer shall furnish, as part of his tender, Earnest Money Deposit (EMD) in the amount as mentioned in IFT for this particular Work. Further, out of the total EMD Amount of **Rs. 305.00 Lakhs** only **Rs. 1.00 Lakh Rupees One Lakh only** shall be paid in the kpp portal using any of the following modes and the Balance Amount of **Rs. 304.00 lakhs** should be in the **form of Bank Guarantee/e-Bank Guarantee** from any Nationalised / Scheduled Bank. Tenderer may also pay full amount of EMD of **Rs. 305.00 Lakhs** using kpp portal using any of the modes mentioned below.

- Credit Card.
- Direct Debit.
- National Electronic Fund Transfer (NEFT).
- Over the Counter (OTC).

NEFT Payment Procedure

If a Tenderer chooses to make Payment of EMD / Tender Processing Fee using Reserve Bank of India's (RBI) National Electronic Fund Transfer (NEFT) System, the Tenderer will need to log into e – Procurement System, access the Tender for which Bid is being created and then select the NEFT Option under the Payment Section and print the Challan shown in that Section. The Printed Challan will have the Unique Bid Reference Number, Account Details of Government of Karnataka and the Amount to be remitted. The Tenderer shall submit the Printed Challan to its Bank Branch (NEFT enabled) and request for an Account – to – Account Transfer, wherein the money will get transferred from the Tenderer's Bank Account to GOK's Bank Account. The Tenderer shall ensure that NEFT Transfer Instructions are executed and the Funds are wired to the Government of Karnataka's Principal Account before the Last Date for Bid Submission and preferably 24 hours before the Last Date for Bid Submission. If the Tenderer's Bank transfers / wires the money after the Last Date for Bid Submission, the Tenderer's Bid will be liable for rejection. Upon executing the Transfer, the Tenderer's Bank will provide a Reference Number generated by NEFT Software as Confirmation of Transfer, which has to be input by the Tenderer in the Payment Section of its Bid as Payment Confirmation before the Bid is submitted i.e. as a pre requisite for Bid Submission. The Account Number from which the Funds were transferred shall be input in the e – Procurement System as part of its Bid also.

OTC Payment Procedure

If a Tenderer chooses to make Payment of EMD / Tender Processing Fees Over The Counter (OTC) in any of the designated Axis Bank Branches listed in the e – Procurement Website (<http://kppp.karnataka.gov.in>), the Tenderer will need to log into e – Procurement System, access the Tender for which Bid is being created and then select the OTC Option under the Payment Section and print the Challan shown in that Section. The Printed Challan will have the Unique Bid Reference Number and the Amount to be remitted along with the Challan. The Tenderer can choose to make the Payment either in the form of Cash or in the form of Demand Draft. Cheque Payments will not be accepted. The Tenderer is requested to specifically inform the Bank Officer to input the Unique Bid Reference Number printed in the Challan in the Banking Software. Upon successful Receipt of the Payment, the Bank will provide a 16 Digit Reference Number acknowledging the Receipt of Payment. This 16 Digit Reference Number has to be input by the Tenderer in the Payment Section of its Bid as Payment Confirmation before the Bid is

submitted i.e. as a pre requisite for Bid Submission.

13.2 EMD Amount shall be submitted by the Tenderer taking into account of the following Conditions.

- a. EMD for Rs. 1.00 Lakh shall be accepted only in the form of Electronic Cash (and not through Demand Draft or Bank Guarantee) and will be maintained in the Government's Central Pooling Account at Axis Bank until the Work is awarded and EMD for the Balance Amount shall be in the Form of Bank Guarantee from any Nationalized / Scheduled Bank valid for a period of not less than two hundred and twenty five (225) days after the Deadline Date for Tender Submission specified in Clause 16. Further, the Original Bank Guarantee shall be submitted to the Office of the Executive Engineer (Road Infrastructure), East Division, 18th Floor, Netaji Subashchandra Bose Building, M.G. Road, Bengaluru – 560001, Email: rieastdivisionbbmp@gmail.com by 05.06.2025 within 16.00 hrs.
- b. The Tenderer's Bid will be evaluated only on Confirmation of Receipt of the Payment of EMD as indicated in Sub Clauses 13.1 and 13.2.

13.3 Any Tender not accompanied by an acceptable EMD and not secured as indicated in Sub Clauses 13.1 and 13.2 above shall be rejected by the Employer as Non Responsive.

13.4 The Earnest Money Deposit of the Unsuccessful Tenderers will be returned within 30 days of the end of the Tender Validity Period as specified in Sub Clause 12.1.

13.5 The Earnest Money Deposit of the Successful Tenderer will be discharged only when the Tenderer has signed the Agreement and furnished the required Performance Security.

13.6 The Earnest Money Deposit may be forfeited

- a. If the Tenderer withdraws the Tender after Tender Opening during the Period of Tender Validity;
- b. If the Tenderer does not accept the Correction of the Tender Price, pursuant to Clause 24; or
- c. In the case of a successful Tenderer, if the Tenderer fails within the specified time limit to
 - i. Sign the Agreement; or
 - ii. Furnish the required Performance Security.

14. Format and Signing of Tender

14.1 The Electronic Tendering System for the Construction of Work comprises of two Stages (i) Technical Bid and (ii) Financial Bid. The Tenderers are required to submit the Tender Documents in two stages electronically.

14.2 The Tender shall contain no Alterations or Additions, except those to comply with instructions issued by the Employer that are duly incorporated.

14.3 Each Page uploaded shall be duly signed and sealed by the Tenderer or a Person or Persons duly authorized to sign on behalf of the Tenderer. Such Authorization shall be indicated by a Written Power – of – Attorney accompanying the Tender. The Corrections, if any, shall be made by striking of and shall be initialed with date.

D. Submission of Tenders

15. Sealing and Marking of Tenders

15.1 The Tenderer shall access Tender Documents, fill them and submit the Completed Tender Document as stated in Clause 10 through Website of e – Procurement itself (<http://kppp.karnataka.gov.in>). The Signed, Sealed and Scanned Copy of all the Documents as stated in Clause 10 shall be attached to the e – Tender Document, failing which the Bid will not be considered. It is the Responsibility of the Tenderer to submit all the Documents pertaining

to Eligibility Criteria / Qualification Information / Design Details with due diligence. All the Pages of the Document shall be serially numbered with an Index for ready reference.

- 15.2 No Physical Documents shall be considered. However, all the participating Tenderers shall produce all the Original Documents / Hard Copy of the Scanned Documents uploaded in the Portal for Verification whenever asked by the Employer.
- 16. Deadline for Submission of the Tenders**
- 16.1 Tenders must be received by the Employer at the Website Address specified above no later than 05.06.2025 up to 16.00 hrs.
- 16.2 The Employer may extend the Deadline for Submission of Tenders by issuing an Amendment in accordance with Clause 9, in which case all Rights and Obligations of the Employer and the Tenderers previously subject to the Original Deadline will then be subject to the New Deadline.
- 17. Late Tenders**
- 17.1 Any Tenderer trying to submit the Tender after Deadline will not be accepted in the e – Procurement.
- 18. Modification and Withdrawal of Tenders**
- 18.1 Tenderers may modify Contents of Technical Bid or Financial Bid before the Deadline prescribed in Clause 16.
- 18.2 Tenderers may withdraw their Tenders by canceling his Bid on the Website only before the Deadline prescribed in Clause 16.
- 18.3 No Tender may be modified and withdrawn after the Deadline for Submission of Tenders.
- 18.4 Withdrawal or Modification of a Tender between the Deadline for Submission of Tenders and the Expiration of the Original Period of Tender Validity specified in Clause 12.1 above or as extended pursuant to Clause 12.2 may result in the Forfeiture of the Earnest Money Deposit pursuant to Clause 13.
- 18.5 Tenderers may only offer Discounts to, or otherwise modify the Prices of their Tenders by submitting Tender Modifications in accordance with this Clause, or include in the Original Tender Submission.

E. Tender Opening and Evaluation

- 19. Opening of Technical Bid of all Tenders and Evaluation to determine Qualified Tenderers**
- 19.1 The Employer will open the Technical Bids of all the Tenders received in the presence of the Tenderers or their Representatives who choose to attend at 16.30 hrs. on 06.06.2025 at Office of the Executive Engineer, Road Infrastructure East Division, 18th Floor, Netaji Subashchandra Bose Building, M.G. Road, Bengaluru – 560001, Email: rieastdivisionbbmp@gmail.com In the event of the Specified Date of Tender Opening being declared a Holiday for the Employer, the Tenders will be opened at the Appointed Time and Location on the Next Working Day.
- 19.2 The Tenderers' Names, the Presence or Absence of Earnest Money Deposit (Amount, Format and Validity), the Submission of Qualification Information and such other Information as the Employer may consider Appropriate will be announced by the Employer at the Opening.
- 19.3 The Employer shall prepare Minutes of the Tender Opening, including the Information Disclosed to those present in accordance with Sub Clause 19.2.
- 19.4 The Employer will evaluate and determine whether each Tender (a) is accompanied by the Required Earnest Money Deposit as per stipulations in ITT Clause 13.1 and (b) meets the Minimum Qualification Criteria stipulated in ITT Clause 3 and (c) contains the Tenderer's Designs and Drawings on the basis of the Parameters fixed in the Tender Document. The Employer will draw out a List of Qualified Tenderers.
- 20. Opening of Financial Bids of the Qualified Tenderers and Evaluation**
- 20.1 The Employer will inform all the Qualified Tenderers the Time, Date and Venue fixed for the Opening of the

Financial Bid containing the Priced Financial Bid. The Employer will open the Priced Financial Bids of Qualified Tenderers at the Appointed Time and Date in the presence of the Tenderers or their Representatives who choose to attend. In the event of the Specified Date of Financial Bid Opening being declared a Holiday for the Employer, the Financial Bid will be opened at the Appointed Time and Location on the Next Working Day.

- 20.2 The Tenderers' Names, the Tender Prices, the Total Amount of each Tender, any Discounts, and such other Details as the Employer may consider Appropriate, will be announced by the Employer at the opening. No Tender shall be rejected at Tender Opening.
- 20.3 The Employer shall prepare Minutes of the Priced Financial Bid Opening, including the Information disclosed to those present in accordance with Sub Clause 20.2.

21. Process to be Confidential

- 21.1 Information relating to the Examination, Clarification, Evaluation, and Comparison of Tenders and Recommendations for the Award of a Contract shall not be disclosed to Tenderers or any other persons not officially concerned with such Process until the Award to the Successful Tenderer has been announced. Any effort by a Tenderer to influence the Employer's Processing of Tenders or Award Decisions may result in the Rejection of his Tender.

22. Clarification of Tenders

- 22.1 To assist in the Examination, Evaluation and Comparison of Tenders, the Employer may, at his discretion, ask any Tenderer for Clarification of his Tender, including Breakdowns of Unit Rates. The Request for Clarification and the Response shall be in Writing or by Cable, but no change in the Price or Substance of the Tender shall be sought, offered, or permitted except as required to confirm the Correction of Arithmetic Errors discovered by the Employer in the evaluation of the Tenders in accordance with Clause 24.
- 22.2 Subject to Sub Clause 22.1, no Tenderer shall contact the Employer on any Matter relating to its Tender from the time of the Tender Opening to the Time the Contract is awarded. If the Tenderer wishes to bring Additional Information to the Notice of the Employer, it should do so in Writing.
- 22.3 Any effort by the Tenderer to influence the Employer in the Employer's Tender Evaluation, Tender Comparison or Contract Award Decisions may result in the rejection of the Tenderers' Tender.

23. Examination of Tenders and Determination of Responsiveness

- 23.1 Prior to the Detailed Evaluation of Tenders, the Employer will determine whether each Tender; (a) has been properly signed; and (b) is substantially Responsive to the Requirements of the Tender Documents.
- 23.2 A Substantially Responsive Tender is one which conforms to all the Terms, Conditions and Specifications of the Tender Documents, without Material Deviation or Reservation. A Material Deviation or Reservation is one (a) which affects in any Substantial Way the Scope, Quality or Performance of the Works; (b) which limits in any Substantial Way, inconsistent with the Tender Documents, the Employer's Rights or the Tenderer's Obligations under the Contract; or (c) whose Rectification would affect Unfairly the Competitive Position of other Tenderers presenting Substantially Responsive Tenders.
- 23.3 If a Tender is not Substantially Responsive, it will be rejected by the Employer, and may not subsequently be made responsive by Correction or Withdrawal of the Non-Conforming Deviation or Reservation.

24. Correction of Errors

- 24.1 Tenders determined to be Substantially Responsive will be checked by the Employer for any Arithmetic Errors. Errors will be corrected by the Employer as follows.
- (a) Where there is a Discrepancy between the Rates in Figures and in Words, the lower of the two will govern.
- 24.2 The Amount stated in the Tender will be adjusted by the Employer in accordance with the above Procedure for the Correction of Errors and, with the Concurrence of the Tenderer, shall be considered as binding upon the Tenderer. If the Tenderer does not accept the Corrected Amount the Tender will be rejected, and the Earnest Money Deposit

may be forfeited in accordance with Sub Clause 13.6 (b).

25. Evaluation and Comparison of Tenders

- 25.1 The Employer will evaluate and compare only the Tenders determined to be Substantially Responsive in accordance with Clause 23.
- 25.2 In evaluating the Tenders, the Employer will determine for each Tender the evaluated Tender Price by adjusting the Tender Price as follows.
- a. Making any Correction for Errors pursuant to Clause 24 and
 - b. Making Appropriate Adjustments to reflect Discounts or other Price Modifications offered in accordance with Sub Clause 18.5.
- 25.3 The Employer reserves the right to accept or reject any Variation, Deviation or Alternative Offer. Variations, Deviations and Alternative Offers and other Factors, which are in excess of the requirements of the Tender Documents or otherwise result in Unsolicited Benefits for the Employer, shall not be taken into account in Tender Evaluation.
- 25.4 The estimated effect of the price adjustment conditions under Clause 41 of the Conditions of Contract, during the implementation of the Contract, will not be taken into account in tender Evaluation - **This clause is deleted.**
- 25.5 If the Tender of the Successful Tenderer is seriously Unbalanced in relation to the Employer's Estimate of the Cost of the Work to be performed under the Contract, the Employer may require the Tenderer to produce Detailed Price Analyses for any or all Items of the Financial Bid, to demonstrate the Internal Consistency of those Prices with the Construction Methods and Schedule Proposed. After Evaluation of the Price Analyses, the Employer may require that the Amount of the Performance Security set forth in Clause 29 be increased at the expense of the Successful Tenderer to a level sufficient to protect the Employer against Financial Loss in the event of Default of the Successful Tenderer under the Contract.

F. Award of Contract

26. Award Criteria

- 26.1 Subject to Clause 27, the Employer will award the Contract to the Tenderer whose Tender has been determined to be Substantially Responsive to the Tender Documents and who has offered the Lowest Evaluated Tender Price, provided that such Tenderer has been determined to be Eligible in accordance with the Design and Drawings submitted by the Tenderer as per the Scope of Work, Design Criteria (as detailed in Section 6) and Tender Drawings as Criteria.

27. Employer's Right to accept any Tender and to reject any or all Tenders

- 27.1 Notwithstanding Clause 26, the Employer reserves the right to accept or reject any Tender, and to cancel the Tender Process and reject all Tenders, at any time Prior to the Award of Contract, without thereby incurring any Liability to the Affected Tenderer or Tenderers or any Obligation to inform the Affected Tenderer or Tenderers of the Grounds for the Employer's Action.

28. Notification of Award and Signing of Agreement

- 28.1 The Tenderer whose Tender has been accepted will be notified of the Award by the Employer prior to Expiration of the Tender Validity Period by Cable, Telex, e – mail or Facsimile confirmed by Registered Letter. This Letter (hereinafter and in the Conditions of Contract called the "Letter of Acceptance") will state the Sum that the Employer will pay the Contractor in consideration of the Execution, Completion and Maintenance of the Works by the Contractor as prescribed by the Contract (hereinafter and in the Contract called the "Contract Price").
- 28.2 The Notification of Award will constitute the Formation of the Contract, subject only to the furnishing of Security Deposit in accordance with the provisions of Clause 29.

- 28.3 The Agreement will incorporate all Agreements between the Employer and the Successful Tenderer. It will be kept ready for Signature of the Successful Tenderer in the Office of Employer within 20 days following the Notification of Award along with the Letter of Acceptance. Within 20 days of Receipt, the Successful Tenderer will sign the Agreement and deliver it to the Employer.
- 28.4 Upon furnishing by the Successful Tenderer the Performance Security, the Employer will promptly notify the other Tenderers that their Tenders have been unsuccessful.
- 29. Security Deposit**
- 29.1 Within 20 days of receipt of the Letter of Acceptance, the Successful Tenderer shall deliver to the Employer a Performance Security in any of the forms given below for an Amount equivalent to 5% of the Contract Price plus Additional Security for Unbalanced Tenders in accordance with Sub Clause 25.5 of ITT and Clause 43 of the Conditions of Contract.
- Banker's Cheque / Demand Draft / Pay Order in favor of The Chief Commissioner, BBMP, Bangalore payable at Bangalore or
 - Bank Guarantee in the Form given in Section 11.
 - Specified Small Saving Instruments pledged to The Commissioner, BBMP, Bangalore.
- 29.2 If the Security Deposit is provided by the Successful Tenderer in the form of a Bank Guarantee, it shall be issued either by a Nationalized / Scheduled Bank.
- 29.3 The Security Deposit if furnished in Demand Draft can, if requested, be converted to Interest Bearing Securities at the Cost of the Contractor.
- 29.4 Failure of the Successful Tenderer to comply with the Requirements of Sub Clause 29.1 shall constitute Sufficient Grounds for Cancellation of the Award and Forfeiture of the Earnest Money Deposit.
- 29.5 The Security Deposit will be discharged in the Stages as mentioned in **Clause 65 of Special Conditions of Contract**.
- 30. Advance Payment and Security**
- 30.1 The Employer will provide an Advance Payment on the Contract Price as stipulated in the Conditions of Contract, subject to the Maximum Amount as stated in Contract Data.
- 31. Corrupt or Fraudulent Practices**
- 31.1 The Employer requires that the Tenderers / Suppliers / Contractors, observe the Highest Standard of Ethics during the Procurement and Execution of such Contracts. In pursuance of this Policy, the Employer
- a. Will reject a Proposal for Award if it determines that the Tenderer recommended for Award has engaged in Corrupt or Fraudulent Practices in competing for the Contract in Question.
 - b. Will declare a Firm Ineligible, either Indefinitely or for a Stated Period of Time, to be awarded a BBMP Contract if it at any time determines that the Firm has engaged in Corrupt or Fraudulent Practices in competing for, or in executing, a GOK Contract.
- 31.2 Furthermore, Tenderers shall be aware of the Provision stated in Sub Clause 50.2 of the Conditions of Contract.

SECTION 3: QUALIFICATION INFORMATION

The information to be filled in by the Tenderer hereunder will be used for purposes of computing Tender Capacity as provided for in Clause 3 of the Instructions to Tenderers. This information will not be incorporated in the Contract.

1.1 Constitution or Legal Status of Tenderer [Attach Copy]

Place of Registration [Attach Copy]

Principal Place of Business

1.2 Total Value of Civil Engineering Construction Works executed and Payments received in the last five years (in Rs. Lakh)

2019 – 20 _____
2020 – 21 _____
2021 – 22 _____
2022 – 23 _____
2023 – 24 _____

[Attach Certificate from Chartered Accountant]

1.3 Work performed as Prime Contractor (in the same name) on Works of Similar Nature over during the Five Years specified in 1.2 above.

Project Name	Name of Employer	Description of Work	Contract Number	Value of Contract in Rs. Lakh	Date of Issue of Work Order	Specified Period of Completion	Actual Date of Completion	Remarks explaining Reasons for Delay in Completion of Work
1	2	3	4	5	6	7	8	9

1.4 Quantities of Work Executed as Prime Contractor (in the same name) during the Last Five Years specified in 1.2 above.

Year	Name of Work	Name of Employer	Quantity of Work Performed ¹				Remarks (Indicate Contract Reference)
			Earthwork Excavation (cum)	Concrete (cum)	Reinforcement Steel (MT)	Asphalt (cum)	
2019 – 20							
2020 – 21							
2021 – 22							
2022 – 23							
2023 – 24							

¹ Items of Work for which Data is requested should tally with that specified in ITT Clause 3

- 1.5 Information on Works for which Tenders have been submitted and Works which are yet to be Completed as on the Date of this Tender.

(A) Existing Commitments and On Going Works

Description of Work	Place and State	Contract No. and Date	Name and Address of the Employer	Value of Contract (Rs. Lakh)	Stipulated Period of Completion	Value of Works ² remaining to be Completed (Rs. Lakh)	Anticipated Date of Completion
1	2	3	4	5	6	7	8

² Attach Certificates from Engineer – in – Charge.

(B) Works for which Tenders already submitted

Description of Work	Place and State	Name and Address of the Employer	Estimated Value of Works (Rs. Lakh)	Stipulated Period of Completion	Date when Decision is Expected	Remarks, if any
1	2	3	4	5	6	7

- 1.6. The following Items of Equipment are considered Essential for successfully carrying out the Works. The Tenderer should furnish all the information listed below.

Item of Equipment	Requirement ³			Owned and Available		Remarks
	No.	Capacity	Owned	No. / Capacity	Age / Condition	

³ The Item of Equipment, Required Number and Capacity should match with those specified in ITT Clause 3.3 (a).

- 1.7 Reports on the Financial Standing of the Tenderer, such as Profit and Loss Statements and Auditor's Reports for the last Five Years.
- 1.8 Qualification and Experience of the Key Technical and Management Personnel in Permanent Employment with the Tenderer and those that are proposed to be Deployed on this Contract, if awarded.
- 1.9 Name, Address, Telephone, Telex and Fax Numbers of the Tenderers' Bankers who may provide References if contacted by the Employer.
- 1.10 Evidence of Access to Financial Resources to meet the Qualification Requirement specified in ITT Clause 3.3 (b): Letter of Credit. List them below and attach Certificate from the Banker in the suggested Format as under.

BANKER'S CERTIFICATE

This is to certify that M/s. is a reputed company with a good financial standing. If the contract for this work, namely is awarded to the above firm, we shall be able to provide overdraft / credit facilities to the extent of Rs. lakhs to meet the working capital requirements for executing the above contract.

Sd/-

Name of the Bank,

Senior Bank Manager,

Address:

- 1.11 Proposals for subcontracting components of works amounting to more than 20% of the contract price – **this clause is deleted**

Name of work	Value of sub contract	Identified Sub-Contractor	Amount involved

- 1.12 Information on litigations in which the Tenderer is involved: (Separate sheet should be added as per the table below)
(Attached (Yes/No))

TABLE 6

Other Party (ies)	Employer	Cause of Dispute	Amount involved	Remarks showing Present Status

- 1.13 The proposed methodology and program of construction, backed with equipment planning and deployment, duly supported with broad calculations and quality control procedures proposed to be adopted, justifying their capability of execution and completion of the work as per technical specifications within the stipulated period of completion as per milestones.

SECTION 4: FORMS OF TENDER, LETTER OF ACCEPTANCE, NOTICE TO PROCEED WITH THE WORK AND AGREEMENT FORM

Form of Tender

Description of the Works: “Construction of Elevated Rotary Flyover at IOC Junction and Construction of additional 2 Lane ROB at Baiyyappanahalli Railway Level Crossing” on Lumpsum, Turnkey with allowable Price Escalation basis.

To
Office of the Executive Engineer,
Road Infrastructure – East Division
18th Floor, Netaji Subashchandra Bose Building,
M.G. Road, Bengaluru – 560001,
Email: rieastdivisionbbmp@gmail.com

Dear Sir

We _____ offer to construct and maintain during the Defects Liability Period and Maintenance Period the Works described above in accordance with the Terms and Conditions, Scope of Work, Conditions of Contract accompanying this Tender for the Lump Sum Fixed No Variation Contract Price of _____ [in figures] (_____) [in letters].¹

This Tender and your Written Acceptance of it shall constitute a Binding Contract between us. We understand that you are not bound to accept the lowest or any Tender you receive.

We undertake that, in competing for (and, if the award is made to us, in executing) the above contract, we will strictly observe the Laws against Fraud and Corruption in Force in India namely “Prevention of Corruption Act 1988”.

We hereby confirm that this Tender complies with the Tender Validity and Earnest Money Deposit required by the Tender Documents.

We attach herewith our Current Income Tax Clearance Certificate.

Yours faithfully
Authorized Signature:

Name and Title of Signatory:
Name of Tenderer:
Address:

¹ To be filled in by the Tenderer, together with his Particulars and Date of Submission at the Bottom of the Form Of Tender.

Letter of Acceptance
(Letter Head Paper of the Employer)

Date:

To: [Name and Address of the Contractor]

Dear Sirs,

This is to notify you that your Tender dated _____ for execution of the **“Construction of Elevated Rotary Flyover at IOC Junction and Construction of additional 2 Lane ROB at Baiyappanahalli Railway Level Crossing” on Lumpsum, Turnkey with allowable Price Escalation basis No. EE/RI/EAST/TEND/04/2025-26, dated 09.05.2025** for the Contract Price of Rupees (_____) [amount in both Words and Figures], as corrected and modified in accordance with the Instructions to Tenderers is hereby accepted by us.

You are hereby requested to furnish Security Deposit plus Additional Security for Unbalanced Tenders in Terms of Sub Clause 25.5 of ITT, in the form detailed in Clause No. 29.1 of ITT for an amount of Rs. _____ within 20 days of the Receipt of this Letter of Acceptance valid up to 30 days from the Date of Expiry of Maintenance Period of 24 months i.e. up to _____ and sign the Contract, failing which action as stated in Clause No. 29.4 of ITT will be taken.

Yours faithfully

Authorized Signature

Name and Title of Signatory

Name of Agency

Issue of Notice to Proceed with the Work
(Letter Head of the Employer)

Date:

To: [Name and Address of the Contractor]

Dear Sirs,

Pursuant to your furnishing the requisite Security Deposit as stipulated in ITT Clause 29.1 and signing of the Contract Agreement for the **“Construction of Elevated Rotary Flyover at IOC Junction and Construction of additional 2 Lane ROB at Baiyyappanahalli Railway Level Crossing” on Lumpsum**, Turnkey with allowable Price Escalation basis for a Tender Price of Rs. _____, you are hereby instructed to proceed with the execution of the said works in accordance with the Contract Documents.

Yours faithfully,

(Signature, Name and Title of Signatory authorized to sign on behalf of Employer)

Agreement Form

This Agreement, made on the _____ day of _____ 20____, between _____ [Name and Address of Employer] (hereinafter called “the Employer”) of the one part and _____ [Name and Address of Contractor] (hereinafter called “the Contractor”) of the other part.

Whereas the Employer is desirous that the Contractor execute “**Construction of Elevated Rotary Flyover at IOC Junction and Construction of additional 2 Lane ROB at Baiyyappanahalli Railway Level Crossing**” on Lumpsum, Turnkey with allowable Price Escalation basis.

No. EE/RI/EAST/TEND/04/2025-26 dated 09.05.2025 (hereinafter called “the Works”) and the Employer has accepted the Tender by the Contractor for the execution and completion of such Works and the remedying of any defects therein at a Contract Price of Rupees _____.

NOW THIS AGREEMENT WITNESSETH as follows.

1. In this Agreement, Words and Expression shall have the same Meanings as are respectively assigned to them in the Conditions of Contract hereinafter referred to, and they shall be deemed to form and be read and construed as part of this Agreement.
2. In consideration of the Payments to be made by the Employer to the Contractor as hereinafter mentioned, the Contractor hereby covenants with the Employer to execute and complete the Works and remedy any Defects therein in conformity in all aspects with the Provisions of the Contract.
3. The Employer hereby covenants to pay the Contractor in consideration of the Execution and Completion of the Works and Remedying the Defects wherein the Contract Price or such other Sum as may become payable under the Provisions of the Contract at the times and in the manner prescribed by the Contract.
4. The following Documents shall be deemed to form and be read and construed as part of this Agreement, viz.
 - i. Letter of Acceptance.
 - ii. Notice to proceed with the Works.
 - iii. Contractor’s Tender.
 - iv. Contract Data.
 - v. Conditions of Contract (including Special Conditions of Contract).
 - vi. Specifications.
 - vii. Drawings.
 - viii. Financial Bid.
 - ix. Minutes of Meeting of Pre Tender Meeting and
 - x. Any other Document listed in the Contract Data as forming part of the Contract.

In witness whereof the Parties thereto have caused this Agreement to be executed the day and year first before written.

The Common Seal of _____
was hereunto affixed in the Presence of
Signed, Sealed and Delivered by the said _____
in the Presence of:
Binding Signature of Employer _____
Binding Signature of Contractor _____

SECTION 5: CONDITIONS OF CONTRACT

Table of Contents

A. General	Page No.
1. Definitions	28
2. Interpretation	29
3. Law Governing Contract	29
4. Employer's Decisions	29
5. Delegation	29
6. Communications	29
7. Subcontracting	29
8. Other Contractors	29
9. Personnel	29
10. Employer's and Contractor's Risks	30
11. Employer's Risks	30
12. Contractor's Risks	30
13. Insurance	30
14. Site Investigation	31
15. Queries about Contract Data	31
16. Contractor to construct the Works	31
17. The Works to be completed by Intended Completion Date	31
18. Approvals by the Employer	31
19. Safety	31
20. Discoveries	31
21. Possession of the Site	31
22. Access to the Site	31
23. Instructions	31
24. Procedure for Resolution of Disputes	31-32
B. Time Control	
25. Program	32
26. Extension of the Intended Completion Date	32
27. Delays ordered by the Employer	32
28. Management Meetings	32
C. Quality Control	
29. Identifying Defects	32
30. Tests	32
31. Correction of Defects	32
32. Uncorrected Defects	33
D. Cost Control	
33. Financial Bid	33
34. Variations	33
35. Payment for Variations	33
36. Submission of Bills for Payment	33
37. Payments	33
38. Compensation Events	34
39. Tax	34
40. Price Adjustment	34
41. Liquidated Damages	34

42.	Advance Payments	34
43.	Securities	34
44.	Cost of Repairs	35
E.	Finishing of Contract	
45.	Completion	35
46.	Taking Over	35
47.	Final Account	35
48.	As Built Drawings	35
49.	Termination	35-36
50.	Payment upon Termination	36
51.	Property	36
52.	Release from Performance	36
F.	Special Conditions of Contract	36-49

Conditions of Contract

A. General

1. Definitions

- 1.1 Terms which are defined in the Contract Data are not also defined in the Conditions of Contract but keep their Defined Meanings. Bold Letters are used to identify Defined Terms.

Financial Bid means the Priced and Completed Financial Bid forming part of the Tender.

Compensation Events are those defined in Clause 38 hereunder.

The **Completion Date** is the Date of Completion of the Works as certified by the Employer in accordance with Sub Clause 46.1.

The **Contract** is the Contract between the Employer and the Contractor to execute, complete and maintain the Works. It consists of the Documents listed in Clause 2.2 below.

The **Contract Data** defines the Documents and other Information, which comprise the Contract.

The **Contractor** is a Person or Corporate Body who's Tender to carry out the Works has been accepted by the Employer.

The **Contractor's Tender** is the Completed Tender Document submitted by the Contractor to the Employer.

The **Contract Price** is the Price stated in the Letter of Acceptance.

Days are Calendar Days; **Months** are Calendar Months.

A **Defect** is any Part of the Works not completed in accordance with the Contract.

The **Defects Liability Period** is the Period named in the Contract Data and calculated from the Completion Date.

The **Employer** is the Party or his Representative who will employ the Contractor to carry out the Works.

Equipment is the Contractor's Machinery and Vehicles brought temporarily to the Site to construct the Works. The

Initial Contract Price is the Contract Price listed in the Employer's Letter of Acceptance.

The **Intended Completion Date** is the Date on which it is intended that the Contractor shall complete the Works.

The Intended Completion Date is specified in the Contract Data. The Intended Completion Date may be revised only by the Employer by issuing an Extension of Time.

Materials are all Supplies, including Consumables, used by the Contractor for incorporation in the Works.

Plant is any Integral Part of the Works which is to have a Mechanical, Electrical, Electronic or Chemical or Biological Function.

The **Site** is the Area defined as such in the Contract Data.

Specification means the Specification of the Works included in the Contract and any Modification or Addition made or approved by the Employer.

The **Start Date** is given in the Contract Data. It is the date when the Contractor shall commence Execution of the Works. It does not necessarily coincide with any of the Site Possession Dates.

A **Subcontractor** is a Person or Corporate Body who has a Contract with the Contractor to carry out a Part of the Work in the Contract which includes Work on the Site.

A **Variation** is an Instruction given by the Employer which varies the Works.

The **Works** are what the Contract requires the Contractor to construct, install, and turn over to the Employer, as

defined in the Contract Data.

2. Interpretation

- 2.1 In interpreting these Conditions of Contract, Singular also means Plural, Male also means Female or Neuter, and the other way around. Headings have no Significance. Words have their Normal Meaning under the Language of the Contract unless specifically defined. The Employer will provide Instructions clarifying Queries about the Conditions of Contract.
- 2.2 The Documents forming the Contract shall be interpreted in the following Order of Priority.
- i. Agreement.
 - ii. Letter of Acceptance, notice to proceed with the Works.
 - iii. Contractor's Tender.
 - iv. Contract Data.
 - v. Conditions of Contract.
 - vi. Specifications.
 - vii. Drawings.
 - viii. Financial Bid.
 - ix. Minutes of Meeting of Pre Tender Meeting and
 - x. Any other Documents listed in the Contract Data as forming Part of the Contract.

3. Law Governing Contract

- 3.1 The Law Governing the Contract is the Laws of India supplanted by the Karnataka Local Acts.

4. Employer's Decisions

- 4.1 Except where otherwise specifically stated, the Employer will decide Contractual Matters between the Employer and the Contractor.

5. Delegation

- 5.1 The Employer may delegate any of his Duties and Responsibilities to other people after notifying the Contractor and may cancel any Delegation after notifying the Contractor.

6. Communications

- 6.1 Communications between Parties which are referred to in the Conditions are effective only when in writing. A Notice shall be effective only when it is delivered (in terms of Indian Contract Act).

7. Subcontracting

The Contractor may subcontract with the approval of the Employer but may not assign the Contract without the approval of the Employer in writing. Subcontracting does not alter the Contractor's obligations.

8. Other Contractors

- 8.1 The Contractor shall cooperate and share the Site with other Contractors, Public Authorities, Utilities and the Employer.

9. Personnel

- 9.1 The Contractor shall employ the Technical Personnel (of Number and Qualifications) as may be stipulated by the Employer from time to time during the Execution of the Work. The Technical Staff so employed shall be available at Site as may be stipulated by the Employer.
- 9.2 If the Employer asks the Contractor to remove a person who is a member of the Contractor's Staff or his Work

Force stating the Reasons, the Contractor shall ensure that the Person leaves the Site within Seven Days and has no further Connection with the work in the Contract.

10. Employer's and Contractor's Risks

10.1 The Employer carries the Risks which this Contract states are Employer's Risks, and the Contractor carries the Risks which this Contract states are Contractor's Risks.

11. Employer's Risks

11.1 The Employer is responsible for the Excepted Risks, which are

- a. Rebellion, Riot Commotion or Disorder unless solely restricted to Employees of the Contractor or his Sub Contractors arising from the Conduct of the Works; or
- b. Deleted; or
- c. Any Operation of the Forces of Nature (in so far as it occurs on the Site) which an Experienced Contractor
 - i. Could not have reasonably foreseen; or
 - ii. Could reasonably have foreseen, but against which he could not reasonably have taken at least one of the following Measures
 - Prevent Loss or Damage to Physical Property from occurring by taking Appropriate Measures or
 - Insure against such Loss or Damage.

12. Contractor's Risks

12.1 All Risks of Loss or Damage to Physical Property and of Personal Injury and Death, which arise during and in consequence of the performance of the Contract other than the Excepted Risks, are the Responsibility of the Contractor.

12.2 A Cause due solely to the Contractor's Design.

13. Insurance

13.1 The Contractor shall prior to commence the works, effect and thereafter maintain Insurances, in the Joint Names of the Employer and the Contractor (cover from the First Working Day after the Start Date to the End of Defects Liability Period) in the Amounts stated in the Contract Data:

- a. For Loss or Damage to the Works, Plants and Materials and the Contractor's Equipment;
- b. For Liability of both Parties for Loss, Damage, Death and Injury to Third Parties or their Property arising out of the Contractor's Performance of the Contract including the Contractor's Liability for Damage to the Employer's Property other than the Works and
- c. For Liability of both Parties and of any Employer's Representative for Death and Injury to the Contractor's Personnel except to the Extent that Liability arises from the Negligence of the Employer, any Employer's Representative or their Employees.

13.2 Policies and Certificates for Insurance shall be delivered by the Contractor to the Employer for his Approval before the Start Date. All such Insurances shall provide for Compensation to be payable to rectify the Loss or Damage incurred. All Payments received from Insurers relating to Loss or Damage shall be held jointly by the Parties and used for the Repair of the Loss or Damage or as Compensation for Loss or Damage that is not to be repaired.

13.3 If the Contractor fails to effect or keep in force any of the Insurances referred to in the previous Sub Clauses or fails to provide Satisfactory Evidence, Policies or Receipts, the Employer may without Prejudice to any other Right or Remedy, effect Insurance for the Cover relevant to such Default and pay the Premiums due and recover the same as a Deduction from any other Monies due to the Contractor. If no Payment is due, the Payment of the Premiums shall be a Debt Due.

13.4 Alterations to the Terms of Insurance shall not be made without the Approval of the Employer.

13.5 Both Parties shall comply with any Conditions of the Insurance Policies.

14. Site Investigation Report

14.1 The Bidders, in preparing the Tender, shall rely on any site investigation reports referred to in the contract data, supplemented by any information available to the Bidder.

15. Queries about Contract Data

15.1 The Employer will clarify queries on the contract Data

16. Contractor to construct the Works

16.1 The Contractor shall construct the Works in accordance with the Specifications and Drawings.

17. The Works to be completed by the Intended Completion Date

17.1 The Contractor may commence Execution of the Works on the Start Date and shall carry out the Works in accordance with the Program submitted by the Contractor, as updated with the approval of the Employer, and complete them by the Intended Completion Date.

18. Approval by the Employer

18.1 The Contractor shall submit Specifications and Drawings showing the proposed Permanent and Temporary Works to the Employer, who is to approve them if they comply with the Specifications and Drawings.

18.2 The Contractor shall be responsible for the Design of Permanent and Temporary Works.

18.3 The Employer's approval shall not alter the Contractor's Responsibility for Design of the Permanent and Temporary Works.

18.4 The Contractor shall obtain Approval of Third Parties for the Design of the Permanent and Temporary Works where required.

18.5 All Drawings prepared by the Contractor for the Execution of the Permanent or Temporary Works, are subject to prior Approval by the Employer before their use.

19. Safety

19.1 The Contractor shall be Responsible for the Safety of all Activities on the Site.

20. Discoveries

20.1 Anything of Historical or other Interest or of Significant Value Unexpectedly Discovered on the Site is the Property of the Employer. The Contractor is to notify the Employer of such Discoveries and carry out the Employer's Instructions for dealing with them.

21. Possession of the Site

Refer Clause 17 of Special Conditions of Contract.

22. Access to the Site

22.1 The Contractor shall allow the Employer and any Person authorized by the Employer Access to the Site, to any Place where Work in connection with the Contract is being carried out or is intended to be carried out and to any Place where Materials or Plant are being manufactured / fabricated / assembled for the Works.

23. Instructions

23.1 The Contractor shall carry out all Instructions of the Employer which comply with the Applicable Laws where the Site is located.

- 24. Procedure for Resolution of Disputes – Deleted (Arbitration Clause is deleted in this tender, tenderer shall read arbitration clause as deleted anywhere mentioned in this tender document.**
- 24.1 If the Contractor is not satisfied with the Decision taken by the Employer, the Dispute shall be referred by either Party to Arbitration within 30 days of the notification of the Employer's Decision – **This clause is deleted.**
- 24.2 If neither Party refers the Dispute to Arbitration within the above 30 days, the Employer's Decision will be final and binding - **This clause is deleted.**
- 24.3 The Arbitration shall be conducted in accordance with the Arbitration Procedure stated in the Special Conditions of Contract- **This clause is deleted.**

B. Time Control

- 25. Program**
- 25.1 Within the Time stated in the Contract Data, the Contractor shall submit to the Employer for Approval a Detailed Program showing the General Methods, Arrangements, Order and Timing for all the Activities in the Works.
- 25.2 The Employer's Approval of the Program shall not alter the Contractor's Obligations. The Contractor may revise the Program and submit it to the Employer again at any time. A revised Program is to show the Effect of Compensation Events.
- 26. Extension of the Intended Completion Date**
- 26.1 The Employer shall extend the Intended Completion Date if a Compensation Event occurs, which makes it impossible for Completion to be achieved by the Intended Completion Date.
- 26.2 The Employer shall decide whether and by how much to extend the Intended Completion Date within 21 days of the Contractor asking the Employer for a Decision upon the Effect of a Compensation Event and submitting Full Supporting Information.
- 27. Delays ordered by the Employer**
- 27.1 The Employer may instruct the Contractor to delay the Start or Progress of any Activity within the Works.
- 28. Management Meetings**
- 28.1 The Employer may require the Contractor to attend a Management Meeting. The Business of a Management Meeting shall be to review the Progress Achieved and the Plans for Remaining Work.
- 28.2 The Responsibility of the Parties for Actions to be taken is to be decided by the Employer either at the Management Meeting or after the Management Meeting and stated in writing to be distributed to all who attended the Meeting.

C. Quality Control

- 29. Identifying Defects**
- 29.1 The Employer shall check the Contractor's Work and notify the Contractor of any Defects that are found. Such checking shall not affect the Contractor's Responsibilities. The Employer may instruct the Contractor to search for a Defect and to uncover and test any Work that the Employer considers may have a Defect.
- 30. Tests**
- 30.1 If the Employer instructs the Contractor to carry out a Test not Specified in the Specification to check whether any Work has a Defect and the Test shows that it does, the Contractor shall pay for the Test and any Samples. If there is no Defect the Test shall be a Compensation Event.
- 31. Correction of Defects**
- 31.1 The Employer shall give Notice to the Contractor of any Defects before the End of the Defects Liability Period, which begins at Completion and is defined in the Contract Data. The Defects Liability Period shall be extended for as long as Defects remain to be corrected.

31.2 Every time Notice of a Defect is given, the Contractor shall correct the Notified Defect within the Length of Time specified by the Employer's Notice.

32. Uncorrected Defects

32.1 If the Contractor has not corrected a Defect within the Time Specified in the Employer's Notice, the Employer will assess the Cost of having the Defect corrected, and the Contractor will pay this Amount.

D. Cost Control

33. Bill of Quantities

33.1 The BOQ shall contain Items for the Construction, Installation, Testing and Commissioning Work to be done by the Contractor - **This clause is deleted.**

33.2 The BOQ is used to calculate the Contract Price. The Contractor is paid for the quantity of the work done at the rate in the BOQ for each item - **This clause is deleted.**

34. Variations

34.1 The Tenderer shall submit his Offer, which shall comply fully with the Basic Requirements of the Tender Documents as indicated in Drawings, Specifications, Terms and Conditions of the Tender.

35. Payment for Variations - This clause is modified in special condition of contract clause no. 67

Payment for increase in the quantities of an item in the BOQ up to 25% of that provided in the Bill of Quantities shall be made at the rates quoted by the Contractor.

35.2 For quantities in excess of 125% of the tendered quantity of an item as given in the BOQ, the Contractor shall be paid at the rate entered in or derived from in the Schedule of Rates (applicable for the area of the work and current at the time of award of contract) plus or minus the overall percentage of the original tendered rates over the current Schedule of Rates prevalent at the time of award of contract.

35.3 If there is no rate for the additional, substituted or altered item of the work in the BOQ, efforts would be made to derive the rates from those given in the BOQ or the Schedule of Rates (applicable for the area of the work and current at the time of award of contract) and if found feasible the payment would be made at the derived rate for the item plus or minus the overall percentage of the original tendered rates over the current Schedule of Rates prevalent at the time of award of contract .

35.4 If the rates for additional, substituted or altered item of work cannot be determined either as at 35.1 or 35.2 or 35.3 above, the Contractor shall be requested to submit his quotation for the items supported by analysis of the rate or rates claimed, within 7 days.

35.5 If the Contractor's quotation is determined unreasonable, the Employer may order the Variation and make a change to the Contract Price which shall be based on Employer's own forecast of the effects of the Variation on the Contractor's costs.

35.6 If the Employer decides that the urgency of varying the work would prevent a quotation being given and considered without delaying the work, no quotation shall be given and the Variation shall be treated as a Compensation Event.

35.7 Under no circumstances the Contractor shall suspend the work on the plea of non-settlement of rates for items falling under this Clause.

36. Submission of Bills for Payment

Refer Clause 18 of Special Conditions of Contract.

37. Payments

37.1 Payments shall be adjusted for deductions for Advance Payments, other than Recoveries in terms of the Contract and Taxes at source as applicable under the Law. The Employer shall pay the Contractor within 60 days of Submission of the Bill. The Contractor shall be liable to pay Liquidated Damages for Shortfall in Progress. For Progress beyond the Agreed Programme, Payment is subject to Availability of the Grants.

- 37.2 Items of the Works for which no Rate or Price has been entered in, will not be paid for by the Employer and shall be deemed covered by other Rates and Prices in the Contract.
- 38. Compensation Events**
Refer Clause 19 of Special Conditions of Contract.
- 39. Tax**
- 39.1 The Rates quoted by the Contractor shall be deemed to be inclusive of all Taxes excluding GST, Duties and Levies including Sales Tax, Municipal Taxes, Local Taxes, Octroi, ESI, all Royalties, Patent Rights, other Incidental Charges, etc. that the Contractor will have to pay for the Performance of this Contract. The Employer will perform such Duties in regard to the Deduction of such Taxes at Source as per Applicable Law. The Rate shall also include the Cost of all Labours, Materials, Plant, Machinery, Equipment's, Carriage and other Inputs involved in the Execution and Completion of the Work. **GST of 18% or as applicable at the time of payment shall be paid to the tendered amount separately.**
- 40. Price Adjustment**
- 40.1 Contract price shall be adjusted for increase or decrease in rates and prices of labour, materials, fuels and lubricants in accordance with the following principles and procedures and as per formulae given in the Contract Data.
- (a) The price Adjustment shall apply for the work done from the date of commencement up to the end of original period of completion or extensions granted by the Employer and shall not apply to work carried out beyond the stipulated period of completion for reasons attributable to the Contractor;
 - (b) Price Adjustment shall be admissible from the date of opening of tenders (original or extended).
 - (c) The price adjustment shall be determined during each quarter from the formulae given in Contract Data.
 - (d) Following expressions and meanings are assigned to the work done during the quarter:

R = Total value of work done during the quarter. It will exclude value for works executed under variations for which price adjustment (if any) will be worked out separately based on the terms mutually agreed.
- 40.2 To the extent that full compensation for any rise or fall in costs to the contractor is not covered by the provisions of this or other Clauses in the Contract, the unit rates included in the contract shall be deemed to include amounts to cover the contingency of such other rise or fall in costs.
- 41. Liquidated Damages**
- 41.1 The Contractor shall pay Liquidated Damages to the Employer at the Rate per day stated in the Contract Data for each day that the Completion Date is later than the Intended Completion Date for the whole of the Works as stated in the Contract Data. The Total Amount of Liquidated Damages shall not exceed the Amount defined in the Contract Data. The Employer may deduct Liquidated Damages from Payments due to the Contractor. Payment of Liquidated Damages does not affect the Contractor's Liabilities.
- 41.2 If the Intended Completion Date is extended after Liquidated Damages have been paid, the Employer shall correct any Overpayment of Liquidated Damages by the Contractor by adjusting the Next Payment of Bill.
- 42. Advance Payments**
Refer Clause No. 59 of Special Conditions of Contract.
- 43. Securities**
- 43.1 The Security Deposit (including Additional Security for Unbalanced Tenders) shall be provided to the Employer no later than the Date Specified in the Letter of Acceptance and shall be issued in an Amount and Form acceptable

to the Employer. The Security Deposit shall be valid until a date 30 days from the Date of Expiry of Defects Liability Period of 24 months plus Claim Period of 6 months and the Additional Security for Unbalanced Tenders shall be valid until a date 30 days from the Date of Issue of the Certificate of Completion.

44. Cost of Repairs

- 44.1 Loss or Damage to the Works or Materials to be incorporated in the Works between the Start Date and the End of the Defects Correction Periods shall be remedied by the Contractor at the Contractor's Cost if the Loss or Damage arises from the Contractor's Acts or Omissions.

E. Finishing the Contract

45. Completion

- 45.1 The Contractor shall request the Employer to issue a Certificate of Completion of the Works and the Employer will do so upon deciding that the Work is completed.

46. Taking over

- 46.1 The Employer shall take over the Site and the Works within seven days of issuing a Certificate of Completion.

47. Final Account

- 47.1 The Contractor shall supply to the Employer a Detailed Account of the Total Amount that the Contractor considers Payable under the Contract before the End of the Defects Liability Period. The Employer shall issue a Defect Liability Certificate and certify any Final Payment that is due to the Contractor within 90 days of receiving the Contractor's Account if it is Correct and Complete. If it is not, the Employer shall issue within 90 days a Schedule that states the Scope of the Corrections or Additions that are necessary. If the Final Account is still unsatisfactory after it has been resubmitted, the Employer shall decide on the Amount Payable to the Contractor and make Payment within 60 days of receiving the Contractor's Revised Account.

48. As Built Drawings

- 48.1 If "As Built" Drawings are required, the Contractor shall supply them by the Dates stated in the Contract Data.
- 48.2 If the Contractor does not supply the Drawings by the Dates stated in the Contract Data, or they do not receive the Employer's Approval, the Employer shall withhold the Amount stated in the Contract Data from Payments due to the Contractor.

49. Termination

- 49.1 The Employer may terminate the Contract if the other Party causes a Fundamental Breach of the Contract.
- 49.2 Fundamental Breaches of Contract include, but shall not be limited to the following.
- a. The Contractor stops work for 45 days when No Stoppage of Work is shown on the Current Program and the Stoppage has not been authorized by the Employer.
 - b. The Contractor becomes Bankrupt or goes into Liquidation other than for a Reconstruction or Amalgamation.
 - c. The Employer gives Notice that Failure to correct a Particular Defect is a Fundamental Breach of Contract and the Contractor fails to correct it within a Reasonable Period of Time determined by the Employer.
 - d. The Contractor does not maintain a Security which is required.
 - e. The Contractor has delayed the Completion of Works by the Number of Days for which the Maximum Amount of Liquidated Damages can be paid as defined in the Contract data; and
 - f. If the Contractor, in the judgment of the Employer has engaged in Corrupt or Fraudulent Practices in competing for or in Executing the Contract.

For the purpose of this paragraph "**Corrupt Practice**" means the Offering, Giving, Receiving or Soliciting of anything of Value to influence the Action of a Public Official in the Procurement Process or in Contract Execution.

“Fraudulent Practice” means a Misrepresentation of Facts in order to influence a Procurement Process or the Execution of a Contract to the Detriment of the Borrower and includes Collusive Practice among Tenderers (prior to or after Tender Submission) designed to establish Tender Prices at Artificial Non Competitive Levels and to deprive the Borrower of the Benefits of Free and Open Competition.

49.3 When either Party to the Contract gives Notice of a Breach of Contract to the Employer for a Cause other than those Listed under Sub Clause 49.2 above, the Employer shall decide whether the Breach is Fundamental or not.

49.4 Notwithstanding the above, the Employer may terminate the Contract for Convenience.

49.5 If the Contract is terminated, the Contractor shall stop work immediately, make the Site Safe and Secure and leave the Site as soon as reasonably possible.

50. Payment upon Termination

50.1 If the Contract is terminated because of a Fundamental Breach of Contract by the Contractor, the Employer shall prepare Bill for the Value of the Work done Less Advance Payments received upto the Date of the Bill, Less other Recoveries Due in Terms of the Contract, Less Taxes due to be deducted at Source as per Applicable Law and Less the Percentage to apply to the Work not completed as indicated in the Contract Data. Additional Liquidated Damages shall not apply. If the Total Amount due to the Employer exceeds any Payment due to the Contractor, the Difference shall be a Debt payable to the Employer.

50.2 If the Contract is terminated at the Employer's Convenience or because of a Fundamental Breach of Contract by the Employer, the Employer shall prepare Bill for the Value of the Work done, the Reasonable Cost of Removal of Equipment, Repatriation of the Contractor's Personnel employed solely on the Works and the Contractor's Costs of protecting and securing the Works and Less Advance Payments received upto the Date of the Certificate, Less other Recoveries due in Terms of the Contract and Less Taxes due to be deducted at Source as per Applicable Law and make Payment accordingly.

51. Property

51.1 All Materials on the Site, Plant, Equipment, Temporary Works and Works are deemed to be the Property of the Employer, if the Contract is terminated because of a Contractor's Default.

52. Release from Performance

52.1 If the Contract is frustrated by any event entirely Outside the Control of the Employer or the Contractor, the Employer shall certify that the Contract has been frustrated. The Contractor shall make the Site Safe and stop work as quickly as possible after receiving this Certificate and shall be paid for all Work carried out before receiving it and for any work carried out afterwards to which Commitment was made

F. Special Conditions of Contract

The following Special Conditions of Contract shall be read in conjunction with the General Conditions of Contract and Instructions to Tenderers as an Extension and not in Limitation of the Obligations of the Contract. In case of Discrepancy between these Special Conditions of Contract and the General Conditions of Contract, the decision of the Employer shall be final and binding on the contractor.

1. The Eligible Tenderer shall submit his Tender for the Work on Turnkey Basis based on his own Design. In this connection, **Section 6** on the "Scope of Work" may be referred.
2. Work shall not be sublet.
3. The Contractor is not to vary or deviate from the Drawings, Specifications, Stipulation, Conditions of Contract or Instructions to execute any work of any kind whatsoever unless so authorized by the Employer in writing.

4. Setting out

The Contractor is to set out the whole of the Work in conjunction with an Officer to be deputed by the Employer and during the Progress of the Works to amend on the requisition of the Employer any errors, which may arise therein and provide all the necessary Labour, Materials and Equipments for doing so. The Contractor is to provide all Tools, Plant, Machinery, Labour, and Materials, which may be necessary and required for the Work. All Materials and Workmanship shall conform to the Relevant Specifications mentioned in the Tender Documents.

5. Labour

The Contractor shall make his own Arrangements for the Engagement of all Staff and Labour, Local or Other, and for their Payment, Housing, Feeding and Transport.

The Contractor shall, if required by the Employer, deliver to the Employer a Return in Detail, in such Form and at such Intervals as the Employer may prescribe, showing the Staff and the Numbers of the Several Classes of Labour from time to time employed by the Contractor on the Site and such other Information as the Employer may require.

6. Compliance with Labour Regulations

During Continuance of the Contract, the Contractor shall abide at all times by all existing Labour Enactments and Rules made there under, Regulations, Notifications and Bye Laws of the State or Central Government or Local Authority and any other Labour Law (including Rules), Regulations, Bye Laws that may be passed or Notification that may be issued under any Labour Law in future either by the State or the Central Government or the Local Authority. The Contractor shall keep the Employer Indemnified in case any action is taken against the Employer by the Competent Authority on Account of Contravention of any of the Provisions of any Act or Rules made there under, Regulations or Notifications including Amendments. If the Employer is caused to pay or reimburse, such Amounts as may be necessary to cause or observe, or for Non Observance of the Provisions Stipulated in the Notifications / Bye Laws / Acts / Rules / Regulations including Amendments, if any, on the part of the Contractor, Employer shall have the Right to deduct any Money due to the Contractor including his Amount of Security Deposit. The Employer shall also have Right to recover from the Contractor any Sum required or estimated to be required for making Good the Loss or Damage suffered by the Employer. The Employees of the Contractor in no case shall be treated as the Employees of the Employer at any point of time.

7. Protection of Environment

The Contractor shall take all Reasonable Steps to protect the Environment on and off the Site and to avoid Damage or Nuisance to Persons or to Property of the Public or others resulting from Pollution, Noise or other Causes arising as a Consequence of his Methods of Operation. During Continuance of the Contract, the Contractor shall abide at all times by all Existing Enactments on Environmental Protection and Rules made there under, Regulations, Notifications and Bye Laws of the State or Central Government, or Local Authorities and any other Law, Bye Law, Regulations that may be passed or Notification that may be issued in this respect in future by the State or Central Government or the Local Authority.

8. Taxes and Duties

The Lump Sum (L.S.) Amount for which the Tender is approved shall be excluding GST, all Expenses for the proper and entire Completion of the Work and shall be inclusive of all Taxes, Duties and Levies including Sales Tax, Municipal Taxes, Local Taxes, Octroi, all Royalties, Patent Rights, other Incidental Charges, etc. The Tenderer may consider Taxes, Duties, Royalties, etc. for the Purpose of Tendering prevailing one month earlier to the Date of Submission of the Tender. Subsequent Changes affected either by Government of Karnataka or Government of India, the Employer may consider Reimbursement of such Increase in the Taxes, Duties, Royalties, etc. upon proper Certification from Appropriate Tax Authorities. Any Reduction in Taxes, Levies, Royalties, etc. either by Government of Karnataka or Government of India, the Tenderer shall reimburse difference in such reduction to the Employer.

9. Site Visit

The Tenderer shall, prior to submitting the Tender for the work, examine the Drawings, Conditions of Contract and Specifications of Work. He shall visit the Site and ascertain and satisfy himself regarding Actual Climate and

Physical Conditions of the Site, Nature, Extent and Practicability of Work, Means of Communication and Access to Site, Availability of Materials, the Extent of Leads and Lifts involved in the Work over the entire Duration of the Contract including Local Conditions, Probable Site for Labour Camps, Stores, Godowns, Casting Yard, Traffic Diversion, etc. The Tenderer's Offer shall take into Consideration all such Factors. The tenderer must obtain clarification on the scope of work referred to in the tender and the availability of railway and defense land with the concerned engineers, and obtain a certification for visiting the site and understanding the nature of the work and same should be uploaded in the e-procurement. The Tenderer shall obtain all necessary Information and other Circumstances, which may affect or influence his Tender. No Extra Charges consequent of any Misunderstanding or otherwise shall be allowable. The expression 'Site' as stated above shall include the Construction Site of the Elevated Rotary /RoB and its approaches including all Components described in the Scope of Work.

10. Arbitration (Clause 24) - This clause is deleted as per the Government Circular Order No. LAE-LAC/198/2024 dated: 16.11.2024.

10.1. The Procedure for Arbitration shall be as follows.

- a. In case of Dispute or Difference arising between the Employer and the Contractor relating to any Matter arising out of or connected with this Agreement it shall be settled in accordance with the Arbitration and Conciliation Act 1996. The Disputes or Differences shall be referred to a Sole Arbitrator. The Sole Arbitrator shall be appointed by Agreement between the Parties; failing such Agreement, by the Appointing Authority (any one of the Organizations as per list enclosed in **Annexure A**).
- c. Arbitration Proceedings shall be held at Khanija Bhavan Bangalore, Karnataka, India.
- c. The Cost and Expenses of Arbitration Proceedings will be paid as determined by the Arbitrator. However, the Expenses incurred by each Party in connection with the Preparation, Presentation, etc. shall be borne by each Party itself.
- d. Performance under the Contract shall continue during the Arbitration Proceedings and Payments due to the Contractor by the Employer shall not be withheld, unless they are the Subject Matter of the Arbitration Proceedings.

11. Type of the Foundation shall be of suitable type (Pile Foundation / Open Foundation). However, there may be Instances where Pile Foundation is not Feasible (e.g. due to Presence of Rock at Shallow Depth or, Presence of a Utility), in which case he may be asked to redesign that Foundation as an Open Foundation.

In case of Failure of any Pile in the Routine Load Test, the Additional Cost on account of Remedial Measures including the Consultant's Fee for suggesting Remedial Measures shall be borne by the Contractor and no claim shall be entertained on this account.

12. The Tender Documents loaded in the kpp Portal, Tender Terms arrived at during Process of Clarifications together with the Letter of Acceptance thereof, shall constitute a Binding Contract between the Successful Tenderer and the Employer and shall form the Foundation of the Rights and Obligation of both the Parties.

12. The Several Documents forming the Contract are to be taken as mutually explanatory of one another, Detailed Drawings being followed in preference to Small Scale Drawings and Figured Dimensions in preference to the Measured Ones. Special Conditions shall be followed in preference to General Conditions / Clauses of the Contract. Particular Specifications shall be followed in preference to General Specifications applicable to the Contract.

14. In case of Discrepancy / Inconsistency between the Description in the Scope of Works, Specifications, Nomenclature of Items and / or the Drawings, Conditions of Contract, Pre-Qualification Document and if there are Varying or Conflicting Provisions made in any Document forming Part of the Contract, the Employer shall be the Deciding Authority with regard to the Intention / Interpretation of the Document and his Decision shall be final and binding on the Contractor without any reservations.

15. The Right to carry out the Work either in Conformity with or in a Manner entirely different from the Terms of this

Tender Document that may be considered most suitable before or subsequent to the Receipt of Tenders due to Exigencies of Work is reserved with the Employer.

16. Any Error in Description or any Omissions there from, shall not vitiate the Contract or release the Contractor from the Execution of the whole or any part of the Works comprised therein according to Drawings and Specifications or from any of his Obligations under the Contract.

17. Possession of the Site (Clause 21)

The Employer shall give the possession of the Site to the Contractor within the 90 days from the date of Commencement. If possession of a Part is not given within 90 Days from the commencement date then the Employer will assess the Probable Delay that may arise due to non-availability of that particular part of Site to the Contractor. In case Possession not given within 180 days from commencement date, the Employer is deemed to have delayed the start of the relevant activities and this will be Compensation Event.

18. Submission of Bills for Payment (Clause 36)

- 18.1 The Intermediate Billing Schedule shall be decided and mutually agreed upon by the successful Tenderer and the Employer on the basis of the Priced Bill of Quantities to be submitted by the successful Tenderer and shall be in accordance with **Annexure B** within Reasonable Alteration. Intermediate Payments shall be made on the Basis of Work assessed by the Employer which will be made on the basis of Quantum of total Work involved as per Intermediate Billing Schedule and Quantum of Work actually executed at a particular Point of Time (within that stage) for such items. The Decision of the Employer shall be final and binding for this Purpose.
- 18.2 The Contractor shall submit to the Employer Running Bills based on the Value of the Work completed as per the Percentage of Breakup of Lump Sum Cost less the Cumulative Amount Paid previously amounting not less than as shown in the payment schedule in Annexure B.
- 18.3 The Employer shall check the Contractor's Bill and determine the Value of the Work executed which shall comprise of Value of the Bill of Quantities based on the Percentage of Breakup of Lump Sum Cost Completed.
- 18.4 The Employer may exclude any Item paid in a Previous Bill or reduce the Proportion of any Item Previously Paid in the Light of Later Information.
- 18.5 It shall be accepted as a Condition of the Contract that the Payment of the Final Bill of the Contractor, less the Withheld Amount and his Acceptance thereof shall constitute a Full and Absolute Release of the Employer from all further Claims by the Contractor under the Contract.
- 18.6 All Bills shall be prepared by the Contractor for submission, in the Prescribed Format or Typed Forms viz. Form 33A and 33B of PWD, which have to be procured by the Contractor and got approved by the Employer before presenting the same.

19. Compensation Events (Clause 38)

- 19.1 The following are the Compensation Events for Time Extension only unless they are caused by the Contractor. In any case, these Compensation Events shall not entitle the Contractor to claim financially whatsoever.
- a. The Employer does not give Access to a Part of the Site as per the mutually agreed Construction Schedule between the Employer and the Contractor.
 - b. The Employer orders a Delay or does not approve Drawings, Specifications or Instructions Required for Execution of Works on time.

- d. The Employer instructs the Contractor to uncover or to carry out Additional Tests upon work which is then found to have no Defects.
 - c. The Employer gives an Instruction for dealing with an Unforeseen Condition, caused by the Employer, or Additional Work required for Safety or other Reasons.
 - e. The Effect on the Contractor of any of the Employer's Risks.
 - d. The Employer unreasonably delays issuing a Certificate of Completion / Scheduled Payment.
 - g. Other Compensation Events listed in the Contract Data or mentioned in the Contract.
- 19.2 If a Compensation Event would prevent the Work being completed before the Intended Completion Date, the Intended Completion Date may be extended. The Employer shall decide whether and by how much the Intended Completion Date shall be extended.
- 19.3 The Contractor shall not be entitled to Compensation to the Extent that the Employer's Interests are adversely affected by the Contractor not having given Early Warning or not having cooperated with the Employer.
20. Time is the Essence of the Contract and it shall be clearly understood that the Contractor is bound to complete the Work in every respect within the Intended Completion Period as stated in the Contract Data.
21. Within ten days from the Date of Signing the Agreement, the Contractor shall submit to the Employer for his Approval, a Time and Progress Chart in direct relation to the Intended Completion Period stated in the Contract Data for Completion of the Items or Groups of Items of Work and for the Contract as a whole. It shall indicate the Procedure and Method in which the Work is proposed to be carried out, the Forecast of the Dates of Commencement and Completion of Various Grades or Sections and the Arrangements regarding Constructional Plant and Temporary Works, which the Contractor intends to make. The Programme of Work may be amended as and when necessary by agreement between the Employer and the Contractor within the Limitations of Time imposed by the Contract Documents.
- a. The Total Work to be executed shall be divided into seven to ten Milestones on mutually agreed Schedule between the Employer and the Contractor. These Milestones shall be based on Financial Progress in concurrence with respective Physical Progress. Progress of Work will be reviewed monthly / at the end of each Milestone. In case the Progress achieved falls short by more than 25% of the Cumulative Programme, the Reasons for such Shortfall shall be examined and a Record made thereof apportioning the Responsibilities for the Delay between the Contractor and the Employer. This Record shall be signed in full and dated by both the Employer and the Contractor.
 - b. In respect of the Shortfall in Progress (reviewed monthly / at the end of the each Milestone), assessed as due to the Delay on the Part of the Contractor, the Contractor shall be Liable to pay as Penalty an Amount equal to **1%** of the Estimated Cost of the Balance Work assessed according to the Programme, for every day that the due Quantity of the Work remains incomplete provided always that the Total Amount of Penalty to be paid under the Provisions of this Clause shall not exceed **10%** of the Lump Sum Contract Value as quoted by the Contractor. In case the Contractor picks up the Progress and completes all Works as per Tender within the Intended Completion Period, the Entire Amount so recovered above will be returned back to the Contractor without any Interest. The Time of Completion is to be certified by the Committee formed for this Purpose by the Employer.
22. On the basis of Project Scheduling, the Contractors shall also supply Monthly Bar Chart for Completion of each Item of Work and other necessary Information for monitoring the Progress of the Work. The Contractor shall also supply suitably Updated Monthly Bar Charts, etc. incorporating inter alia the Decision taken during Site Inspections

/ Review Meetings.

23. The Approval of the above Programme by the Employer shall not absolve or relieve the Contractor of any of his Responsibilities to complete the whole of the Works by the Intended Completion period or Extended Completion Period, if any.

24. **Progress of Work**

The Contractor shall give the Employer on the 4th Day of each Month a Progress Report of the Work done during the Previous Month.

The Progress of Work will be reviewed periodically by the Employer with the Contractor and Shortfalls, if any sorted out, the Contractor shall thereupon take such Action as may be necessary to bring back his Work to Schedule without any Additional Cost to the Employer by employing Overtime Operations, increasing the Number of Shifts, Capacity of the Equipment or otherwise as directed by the Employer and nothing shall be paid extra.

25. **Drawings to be kept at Site**

The Required Sets of the Drawings as approved by the Employer shall be kept by the Contractor at the Site and the same shall at all reasonable time be available for Inspection and Use by the Employer and his approved Representative and any other person authorized by the Employer in writing.

26. **Inspection of Works**

In addition to the Provisions of Relevant Clauses of the Contract, the Work shall also be open to Inspection by the Employer and his approved Representative. The Contractor shall at all times during the Usual Working Hours and at all times at which Reasonable Notices of the Intention of the Employer or his approved Representative as stated above to visit the Works shall have been given to the Contractor, either himself be present to receive the Orders and Instructions or have a responsible Site Engineer duly accredited in writing, to be present for that Purpose.

27. **Foreign Exchange**

It shall be clearly understood that no Foreign Exchange shall be made available for the Purpose of Equipment, Plants, Machinery or Materials of any kind or any other Items / Purposes required to be carried out in Execution of the Work. It shall be clearly understood that no Foreign Exchange required for importing Equipments, Materials for Tools, Plants and Machinery, etc. that may be required in carrying out the Work, even from the Rupee Payment Country will be made available.

28. **Night Work**

For Completing the Work well within the Intended Completion Period, the Contractor might be required to work in two or more Shifts (including Night Work) and no Claim whatsoever shall be entertained on this account, notwithstanding, the Fact that the Contractor will have to pay to the Labours and other Staff engaged directly or indirectly on the Work according to the Provisions of the Labour Regulations and the Agreement entered into and for Extra Amounts towards any other Reason. None of the Permanent Works shall be carried out during Night or on Authorized Public Holidays without the permission in writing of the Employer except when Work is unavoidable or absolutely necessary for the Safety of Life, Property or Work in which case the Contractor shall immediately advise the Employer accordingly, provided that the Provisions of this Condition shall not be Applicable in the case of any Work which is customary to carry out by Rotation or in Double Shift.

29. **Existing Services**

Existing Drains, Pipes, Cables, Overhead Wires, Sewer Lines, Water Lines and similar Services encountered in the Course of the Execution of the Work shall be protected / maintained against the Damage by the Contractor. The Contractor shall not store Materials or otherwise occupy any part of the Site in a manner likely to hinder the Operation of such Services. In case Temporary Shifting of such Services is required to facilitate the Work, the Contractor at no Extra Cost shall do the same.

30. No Work shall be covered or put out of View without the Approval of the Employer or his approved Representative and the Contractor shall afford Full Opportunity for Examination of such Services before these are permanently installed or extended thereof as per Site Requirement.
31. No Accommodation is available at the Site of Work for Office, Residence, Labour, Store, etc. and the Contractor has to make his own Arrangement and no Claim whatsoever on this account shall be entertained.
32. The Contractor shall make his own arrangement for the Disposal of the Spoils from the Works to such Place where the same shall not cause Nuisance and shall be acceptable to the Authorities concerned.
33. The Execution of any Items of Work where any Incidental Work is actually required but not specifically stated in the Tender Document, it is to be understood that the Amount quoted by the Contractor shall cover such Charges also and nothing extra on account of such Incidental Charges, if any, shall be paid.
34. The Contractor shall make his own arrangement at his own Cost for the Provision of Telephone Facilities at the Site of Works or at any other place.
35. The Electric and Water Connections to be obtained for use of the Work under the Contract are subject to the following Conditions.
 - a. The Contractor shall make his own arrangement for Electricity and Water Supply. However, the Employer will assist the Contractor to get Power from the concerned Department at the Contractor's Cost.
 - b. The Employer shall in no way be Responsible for any Delay in getting the Electric Connection and Water and no Claim on this account whatsoever, shall be entertained. It shall be clearly understood that the Contractor has to make his own Arrangement for Generators for use before the Electric Connection is made available and also to be used as a Standby Arrangement in case of Power Failure, etc. or in the case of Disconnection of Electric Supply by the concerned Department for any reason.
36. No Payment will be made to the Contractor for Damage caused by Unprecedented Rains, or other Natural Calamities or Accidents or Acts of God, during the Execution of the Works and no such Claim on this account will be entertained in this regard the Government/employer decision is the final.
37. The employer's is also responsible for the risks for act of God, epidemic, extremely adverse weather conditions, lightning, earthquake, landslide, cyclone, flood, volcanic eruption, chemical or radioactive contamination or ionizing radiation, fire or explosion (to the extent of contamination or radiation or fire or explosion originating from a source external to the site) (**GCC Clause 11**)
38. The Contractor is held Responsible for and to make good all Injuries, Damages and Repairs, rendered necessary by Fire, Rain, Traffic, Floods or other Causes. The Employer shall not be held Responsible for any Claims for Injuries to Personal Workmen or for Structural Damage to Property happening from any Neglect, Default, Want of Proper Care or Misconduct on the Part of the Contractor or of any other of his authorized Representatives in his Employment during the Execution of the Work. The Compensation, if any, shall be paid directly to the Department / Authority / Persons concerned by the Contractor at his own Cost.
39. The Contractor will take all Necessary Measures for the Safety of Traffic and Workers during Construction and provide, erect and maintain such Barricades, including Signs, Markings, Flags, Lights and Skilled Flagmen, as necessary, all around the Excavation / Construction Area and at such Intermediate Points, as directed by the Employer including the Proper Identification of the Construction Areas. He shall be Responsible for all Damages and Accidents on account of Construction and other Relevant Activities. Nothing shall be paid extra on account of above.

The Temporary Warning Signs / Lamps shall be installed at all Barricades during the Hours of Darkness and kept

lit there at all times during these hours and nothing shall be paid extra.

Barricading and Safety Requirements are very Important Aspects at this Portion of the Road. The above Provisions shall be followed strictly and at no time the Construction / Excavation Areas are to be left Unbarricaded or without Red Lamps during the Hours of Darkness. Failure to comply with the Requirements mentioned in the Preceding Paragraphs shall be deemed to be a Breach of Contract on the Part of the Contractor for which the Contractor shall be Liable to action under Relevant Clauses / Conditions of the Agreement.

In addition to other Actions being taken for such Breach of Contract, the Contractor shall be liable to pay compensation @ Rs.100/- per Sqm of Area left UN barricaded.

The Employer shall give Notice to the Contractor for such Barricade and the Contractor shall comply with the same within one day of such Notice failing which he shall be liable to pay the above Compensation and Actions for the said Breach of Contract. The Decision of the Employer in respect of the above shall be final and binding.

The Contractor shall use every Reasonable Means to prevent any of Roads, Bridges communicating with or on the Routes to the Site from being damaged by any Traffic of the Contractor or any of his Sub Contractors and in particular, shall select Routes and Vehicles to avoid such Unnecessary Damages.

40. All arrangements such as signage, barricading, safety, etc. for traffic diversion during construction (within the Battery Limits) shall be considered as Incidental to the Work and Contractor's Responsibility. The Contractor shall obtain Necessary Approval of the Diversion Plans from the concerned Authorities. If necessary, the tenderer shall carry out the necessary work of widening the carriageway width sufficient for traffic as acceptable to the authorities; the widening portion shall be treated as additional scope and shall be dealt with under the variation clause.

41. **Safety of Workers**

In respect of all Labour directly or indirectly employed in the Work for the Performance of the Contractor's Part of this Agreement, the Contractor shall at his own Expense arrange for the Safety Provisions as per Indian Standard Safety Codes (Latest Edition) shown below and shall at his own Expense provide all Facilities in connection there with. In case, the Contractor fails to make Arrangement and provide Necessary Facilities as aforesaid, he shall be liable to pay **Rs. 10000/-** per Day for each day of Delay from the Date of Notice issued to the Contractor in this regard and in addition the Employer shall be at liberty to make Arrangement and provide Facilities as aforesaid and recover the Cost incurred on that behalf from the Contractor, and no Claims whatsoever shall be entertained.

- | | |
|------------------------|--|
| I. IS: 3696 (Part I) | : Safety Code for Scaffolds and Ladders |
| II. IS: 3696 (Part II) | : Safety Code for Scaffolds and Ladders, Part II Ladders |
| III. IS: 3764 | : Safety Code for Excavation Work |
| IV. IS 4081 | : Safety Code for Blasting and Drilling Operations |
| V. IS: 4138 | : Safety Code for Working in Compressed Air |
| VI. IS: 5121 | : Safety Code for Piling and other Deep Foundations |
| VII. IS: 5916 | : Safety Code for Construction involving Use of Hot Bituminous Materials |
| VIII. IS: 7293 | : Safety Code for Working with Construction Machinery |
| IX. IS: 7969 | : Safety Code for Storage and Handling of Building Materials |
| X. | Any other Code and / or as per Directions of the Employer. |

42. The Employer shall have full powers to send Workmen and employ on the Premises to execute Fittings and other Work not included in the Contract. For whole Operations, the Contractor is to afford every Reasonable Facility during Ordinary Working Hours provided that such Operations shall be carried on in such a manner so that not to impede the Progress of the Work included in this Contract in the opinion of the Employer.
43. The Contractor shall conduct his Work so that not to interfere with or hinder the Progress or Completion of the Work being performed by other Contractors, Piece Workers or by the Employer and shall as far as possible arrange his Work and shall place and dispose the Operations of the other Contractors, Piece Workers, or of the Employer. The Contractor shall arrange his Work with that of the others in an Acceptable Manner and shall perform it in Proper Sequence to the complete Satisfaction of the Employer at the Contractor's own Cost.

44. The Contractor shall assume all Liabilities, Financial or otherwise in connection with his Contract and shall protect and save the Employer from any and all Damages and Claims that may arise because of the Presence and Operations of others working on or near the Site. The Contractor shall assume all Responsibilities for all Work not completed or accepted because of the Presence and Operations of other Contractors or Piece Workers or of the Employer.
45. At the time of Construction, the Contractor shall embed all Electrical / other Fixtures like Base Plates, Brackets, Conduits, etc. for Street Lighting, etc. as per the Directions of the Employer. Nothing Extra whatsoever will be payable on this account.
46. For execution of any Items of Work where Incidental Works such as Bailing out Water, Shoring, etc. are actually required but not specifically stated in the Tender, it is to be understood that the Lump Sum Amount quoted by the Contractor shall cover such Charges also and nothing Extra on account of such Incidental Charges, if any, shall be paid.
47. **No Waiving of Legal Rights and Powers**
- The Employer shall not be precluded or stopped from taking any Measurements and Framing of Estimates or Detaining any Certificates made either before or after the Completion and Acceptance of the Work and Payment, from showing the True Amount and Character of the Works Performed and Materials furnished by the Contractor and from showing that any such Measurements, Estimates or Certificates Untrue or incorrectly made and that the Employer shall not be precluded or stopped from recovering from the Contractor and such Damages as it may be sustained by Reasons of his Failure to comply with the Terms and Conditions of the Contract. Neither the Acceptance by the Employer nor any Payment for Acceptance of the whole or any part of the Work nor any Extension of Time nor any Possession taken by the Employer shall operate as a Waiver of any Portion of the Contract or any Power herein reserved or of any Risk to Damage. A Waiver of any Breach of the Contract shall not be held to be a Waiver of any other or subsequent Breach.
48. The Contractor shall provide and bear all Expenses and Charges for Special or Temporary Service Roads required by him in Connections with Access to the Site at no Extra Charges and his Lump Sum Offer shall deem to include the same. He shall alter, adopt or maintain the same as required from time to time or as directed by the Employer. The Employer shall have Right of Way to this at all times and will not entitle the Contractor to claim Extra on this account.
49. The Tenderers shall also mention with their Tender Documents the Name of their Project Managers, Work Managers, and Graduate Engineers who shall be engaged in this Work.
50. The Tenderers may specify the Number and Category of each type of Skilled Personnel to be deputed by the Contractors. It may clearly be stated that whether such Skilled Persons are under the Employment of the Tenderers or are still to be appointed by them. The Number of Skilled and Unskilled Persons to be employed shall be in agreement with the Programme of Work submitted by the Tenderers and discussed elsewhere in the Tender Documents.
51. in addition to the clause 3.3 a in The Tenderers shall further specify the additional provisions of Plant and Machinery to be deployed by them for the Work on the safer side and smooth functioning of project (Proof of documents having making arrangements either own / lease / hire of following equipments shall be submitted in the portal).
- i. Source of Ready Mix Concrete (RMC) Suppliers and their rated Capacity in cum / hr.
 - ii. Loaders.
 - iii. Tippers with adequate Capacity to suit Site Conditions and Construction Schedule.

- iv. Dumpers.
 - v. Trucks.
 - vi. Transit Mixers.
 - vii. Vibrators (Needle, Surface and Shutter).
 - viii. Compressors.
 - ix. Multistrand Pre Stressing Jacks.
 - x. Grouting Equipment and Accessories.
 - xi. Hydraulic Jacks (Capacity and Nos.).
 - xii. Concrete Pumps (expected total Capacity – 50 cum / hr. of 2 Nos.)
 - xiii. Hydraulic Rotary Rig of minimum 1000mm diameter.
 - xiv. Cranes (expected minimum 2 Nos. of 50T Capacity each).
 - xv. Excavators (expected total Capacity – 200 cum / hr., Capacity, Nos.).
 - xvi. Road Construction Machinery.
 - xvii. Generators.
 - xviii. Water Pumps – Number and their Capacity.
 - xix. Trailer Trucks and any other Equipment.
52. The Tenderers shall furnish a Construction Programme on month – to – month basis for the entire Period of Execution of the Work. The Construction Programme shall indicate specifically the Items such as Plant and Machinery, Shuttering and Staging, Materials mentioning Various Items like other Pre Stressing Materials, Sand, Grit and other Consumables.
- After Award of the Contract the Contractor shall submit Cash Flow Chart on month – to – month basis for the entire Period of Execution of the Work. The Cash Flow Chart shall indicate specifically the Investments on Items such as Plant and Machinery, Shuttering and Staging, Materials mentioning Various Items like other Pre Stressing Materials, Sand, Grit and other Consumables. The Cash Flow shall indicate in Detail, the Inputs to be mobilized by the Contractor from his own Sources e.g. own Capital, Bank Loans, etc. and Resources to be supplemented by the Employer like Mobilization Advance and Interim Payments against the Work done by the Contractor such Details at monthly intervals for monitoring of the Project by the Employer.
53. The Contractor is expected to have a Workshop Facility available at Site for Fabrication / Additions and Alterations to the Shuttering, Pre Stressing Works and or other Allied Works. It may please be indicated that whether the Workshop Facilities shall be provided in house or is proposed to be subcontracted locally. In both the cases, the Tenderer is to give the Details and Number of Equipments to be installed in the Workshop for above mentioned Work.
54. The Employer shall deploy Third Party/Project Management Consultant (PMC) for Design Checking and Approval, Supervision, Quality Control, Progress Monitoring, etc. The Contractor shall abide by the Instructions / Suggestions given by the PMC for the successful completion of the Project.
- 55. Interference with Traffic and Adjoining Properties**
- a. All Operations necessary for the Execution and Completion of the Works and the Remedying of any Defects therein shall, so far as Compliance with the Requirements of the Contract Permits, shall be carried out so that not to interfere unnecessarily or improperly with the following.
 - i. The Convenience of the public, or
 - ii. The Access to, Use and Occupation of Public or Private Roads and Footpaths or of Properties whether in the Possession of the Employer or of any other person.

- b. In case any Operation connected with the Traffic necessitates Diversion, Obstruction or Closure of any Road, Railway or any other Right of Way, the Approval of the Employer and the Concerned Authorities shall be obtained well in advance by the Contractor.

56. Avoidance of Damage to Roads

The Contractor shall use every Reasonable Means to prevent any of the Roads, Bridges communicating with or on the Routes to the Site from being damaged, injured by any Traffic of the Contractor or any of his Sub Contractors and in particular, shall select Routes, choose and use Vehicles and restrict and distribute Loads so that any such Extraordinary Traffic as will inevitably arise from the Moving of Materials, Plant, Contractor's Equipment or Temporary Works from and to the Site shall be limited, as far as reasonably possible, and so that no Unnecessary Damage or Injury may be occasioned to such Roads and Bridges.

57. Transport of Contractor's Equipment or Temporary Works

- a. The Contractor shall be Responsible for and shall pay the Cost of Strengthening any Bridges or altering or improving any Road communicating with or on the Routes to the Site to facilitate the Movement of Contractor's Equipment or Temporary Works and the Contractor shall indemnify and keep indemnified the Employer against all Claims for Damage to any such Road or Bridge caused by such movement, including such Claims as may be made directly against the Employer, and shall negotiate and pay such Claims arising solely out of such Damage.
- b. If it is found necessary for the Contractor to move one or more Loads of Heavy Constructional Plant and Equipment, Materials or Precast Units or Parts of Units of Work over Roads, Highways, Bridges on which such Oversized and Overweight Items are not normally allowable to be moved, the Contractor shall obtain Prior Permission from the Concerned Authorities. Payments for complying with the Requirements, if any, for Protection of or Strengthening of the Roads, Highways or Bridges shall be made by the Contractor and such expenses shall be deemed to be included in his Contract Price.

58. Unpriced Bill of Quantities

- i. The Contractor shall furnish Unpriced Bill of Quantities along with the Technical Bid in order to ascertain the Scope of Work, to enable Technical Acceptability and to ensure Completion of Work within the Stipulated Time Schedule.
- ii. The Contractor shall carry out all the Items required for the Construction of Construction of ROB at Baiyappanahalli at LC No:136A, Bangalore including construction of Elevated Rotary fly over at IOC junction and construction of road integrating Banaswadi main road and Old madras road to facilitate connectivity to new M. Visvesvaraya terminal at Baiyappanahalli railway station and shall include all such Items in the Unpriced Bill of Quantities.
- iii. The Unpriced Bill of Quantities will be considered only for the General Assessment of the Tender and it shall not be deemed to contain all the Items necessary for the Successful Completion of Construction of ROB at Baiyappanahalli at LC No:136A, Bangalore including construction of Elevated Rotary fly over at IOC junction and construction of road integrating Banaswadi main road and Old madras road to facilitate connectivity to new M. Visvesvaraya terminal at Baiyappanahalli railway station. Non-submission of bill of quantities unprice shall not lead to disqualification and is only to make the bidder aware of the quantity of major items required for execution and select for site yard stock.
- iv. During Execution, Items other than indicated in the Unpriced Bill of Quantities, but required for Construction of ROB at Baiyappanahalli, Bangalore including construction of Rotary fly over at IOC junction and construction of road integrating Banaswadi main road and Old madras road to facilitate connectivity to new M. Visvesvaraya terminal at Baiyappanahalli railway station, and Allied Works shall be executed by the Contractor. The Employer's decision as to whether or not the Contractor is liable for any additional payment in this regard shall be final.

59. Advance Payments (Clause 42)

- i. The Employer shall make Payment to the Contractor of the Amounts stated in the Contract Data by the

Date stated in the Contract Data, against provision by the Contractor of an Unconditional Bank Guarantee in a form acceptable to the Employer issued by a Nationalized / Scheduled Bank in Amounts equal to the Advance Payment. The Guarantee shall remain Effective until the Advance Payment has been repaid, but the Amount of the Guarantee shall be progressively reduced by the Amounts repaid by the Contractor. The Advance payment Amount will be recovered by the Employer in five (5) equal Installments from the Running Account Bill of the Contractor. Interest will not be charged on the Advance Payment.

- ii. The Contractor is to use the Advance Payment only to pay for Mobilization Expenses required specifically for execution of the Works. The Contractor shall demonstrate that Advance Payment has been used in this way by Supplying Copies of Invoices or other Documents to the Employer.

60. Personal Protective Equipment

The Contractor shall at all times keep and maintain an adequate supply of suitable Personal Protective Equipment, which shall be readily available for use at all times on the site and would include but not be limited to the following Items.

- Safety Helmets.
- Hearing Protection.
- Respiratory Protection.
- Eye Protection.
- Protective Gloves.
- Safety Footwear.
- High Visibility Clothing conforming to BS EN 471 Class 3 Standards.

All Sites shall be designated as HARD HAT and SAFETY BOOTS SITES and as such an adequate supply of Safety Helmets and Safety Boots shall be kept available for use by all Staffs, Workers and Authorised Visitors to the Sites. The Contractor shall remove from the Site any worker who consistently refuses to wear the appropriate Personal Protective Equipment.

All Workmen at Site shall be provided with Safety Helmets and Yellow / Orange Jackets. Workmen required on Site during night hours shall be provided with Fluorescent Yellow Jackets with Reflective Lanes. Workers employed on mixing Asphaltic Materials, Cement, Lime Mortars, Concrete, etc. shall be provided with Protective Footwear, Protective Goggles. Those engaged in handling any Material, which is injurious to the eyes, shall be provided with Protective Goggles. Those engaged in Welding Works shall be provided with Welder's Protective Eye Shield. Stone Breakers shall be provided with Protective Goggles and Protective Clothing and seated at sufficiently safe intervals.

61. First Aid

The Contractor shall maintain, at every Work Place, in a readily accessible place First Aid Appliances including an adequate supply of Sterilised Dressings, Bandages, Sterilised Cotton Wool, Eye Irritation Sterile Solution, Disposable Gloves, Ointments for Burns / Cuts, Pressure Dressings, Paper Towels, General Purpose Medicines, etc. as prescribed in the Factory Rules of the State in which the Work is being carried out. The Appliances shall be kept in good order and in large work places. They shall be placed under the charge of the Safety Officer deputed by the Contractor for this Work and the Safety Officer shall be readily available during Working Hours. In each Site Office and Location one Person, suitably trained in First Aid, shall be available at all Working Hours for the purpose of attending to emergencies.

Outbreak of infectious disease: The contractor shall remove from his camp such labour and their families as refuse protective inoculation and vaccination when called upon to do so by the Engineer or the Engineer's representative on the advice of the BBMP, Should cholera, plague, Covid-19 or other infectious disease break out, the contractor shall burn the huts, beddings, clothes and other belongings of or used by the infected parties and promptly erect new huts on healthy sites as required by the engineer, failing which within the time specified in the Engineer's requisition, the work may be done by the BBMP and the cost thereof recovered from the contractor.

62. Fire Precautions

The Contractor shall be responsible for supplying and maintaining adequate Fire Precaution Facilities on all the Work Sites. The following minimum Standards shall be adhered to.

- The Contractor shall ensure that specially trained personnel are available to deal with fires due to Electrical Causes, Gas Explosions, etc.
- A Good Standard of Housekeeping shall be maintained at all times on the Sites.
- No Accumulations of Rubbish shall be allowable to gather.
- Combustible Scrap and other Construction Debris shall be disposed off site on day – to – day basis. If Scrap is to be burnt on site, the burning site shall be specified and located at a distance no less than 50m from any Construction Work or any other Combustible Materials.
- Signage shall be erected at prominent positions showing the correct use of Portable First Aid Fire Extinguishers.
- Emergency Plans and Fire Evacuation Plans shall be prepared and issued. Mock Drills shall be held on a regular basis to ensure the Effectiveness of the Arrangements.

63. Fire Fighting Equipment

At various locations around the Site, clearly visible Fire Points shall be established for use in an Emergency and each Fire Point should have available as a minimum the following type of Equipment.

- Dry Powder Extinguisher.
- Water Type Extinguisher.
- Bucket of Sand.

Recharging of Fire Extinguishers and their Proper Maintenance should be ensured and as a minimum should meet Indian National Standards.

The Telephone Number of the Local Fire Brigade along with other Emergency Numbers (Hospital, Police Stations, Ambulance, etc.) shall be displayed near each telephone on Site. Supervisors and Workmen at the Site should be trained in the Use of Fire Fighting Equipment provided at the Site.

64. Storage of Flammable Liquid

All Flammable Liquids shall be kept in a Secure Fire Resistant Store protected from Electrical Sparks, Welding Sparks, Open Flames and Smoking.

Only such amounts of Flammable Liquids shall be issued as are required for immediate use.

Cans for carrying Flammable Liquids shall be leak proof and properly stoppered and clearly marked “Flammable Liquid”.

Rags soaked in Paints, Kerosene and other Flammable Liquids shall be disposed of daily under supervision. Large quantities of such rags shall not be allowable to accumulate.

All Diesel Fuel Storage Tanks shall be banded around in order to control any Spillage or Leakage that may occur.

“No Smoking” Signs shall be prominently displayed at all areas where Flammable Materials are stored.

65. Release of Performance Security

95% of Performance Security shall be released after satisfactory completion of Project Defect Liability Period of 24 Months and the balance 5% shall be released only after satisfactory completion of Maintenance Period of further 24 Months after Defect Liability Period.

66. Price Adjustment (Clause 40)

When the time is extended for reasons attributable to the employer, the price adjustment beyond the contract period will be applicable as per State Government Order No. 791EXP-12/2015 Bangalore dated 26/12/2016.

67. Variation (Clause 34 & 35)

No variations shall be executed unless the authority has issued the variation order for the scope of work mentioned in section 6 under clause 2.8 and 2.17.10. Unless the Railway Authority approves the deviations for, any modification in the span length, foundation, substructure and superstructure will not be considered as a variation.

The K-Ride/South western railways approved the GAD for elevated rotary in the railway portion based on their requirement of span arrangement of 4 Nos, each 81.31m, 68.5m, 56.0m, and 48m to accommodate their proposed future development of sub urban railway lanes, according to railways basic requirements a plan has been prepared and indicated in tender drawings in view of the future development and railway's authority approved GAD in principle to proceed for detailed design.

It is clarified that if the design requires additional supporting structures in the rotary portion of railways apart from the four column main structure shown in the tender drawing and as approved by railways, shall be treated separately and the actual quantities for the additional supporting structures executed on site by the contractor shall be eligible to be claimed from foundation to soffit of trapezoidal box girder.

If variation quantities executed on order of authority, the payment will be paid at the rate derived from the schedule of rates (applicable for the area of the work and current at the time of award of variation order) plus or minus the overall percentage of the original tendered rates over the amount put to tender mentioned in the tender notification which is arrived based on the schedule of rates prevalent at the time of award of contract.

68. he Authority will appoint a Third party Engineer on behalf of Authority engineer having as one of its primary functions the provision of consulting, advisory and supervisory services for this projects.

The appointment of third Party Engineers designated quality supervision Consultants would go a long way in assisting the Authority Officers to ensure adherence to quality standards in construction works and Interpretations of contract conditions.

The Third party quality Supervision consultant shall inspect the works periodically and submit the reports along with the prescribed checklists duly completed to the Authority for taking action.

Annexure A:

**LIST OF ORGANIZATIONS WHO ARE CONSIDERED AS APPOINTING AUTHORITY
FOR APPOINTMENT OF ARBITRATORS**

Arbitration Centre, Khaniya Bhavan, Bengaluru

Annexure-B Intermediate Payments- Schedules clause - 18 of GC

Sl. No.	Particulars	Total %	Sub Distribution
1	Studies/ Investigations/ Surveying, design	1.50%	
	a. Studies Reports		0.25%
	b. Investigation Reports		0.50%
	c. Surveying Reports		0.50%
	d. Design & Drawings		0.25%
2	Approval of General Alignment Drawings	1.00%	
	a. Elevated Rotary Flyover with approaches		0.50%
	b. Road Over Bridge at L C No 136/A		0.50%
3	Mobilisation including setting up office and establishing Bench Marks	2.00%	
	a. Constn. Of Site office		0.35%
	b. Constn. Of labour camp		0.21%
	c. Constn. Of toilet facility to labour including basic amenities, water supply, sanitary etc.		0.21%
	d. Establishment of Benchmark and Transfer of GTS along with Report		0.35%
	e. Construction Equipments		0.27%
	f. Lightings at site and labour camp with Generator		0.21%
	g. Setting out/markings of Flyover/ROB with approaches		0.40%
4	Demolition of existing Flyover/ROB	1.00%	
	Demolition of existing Flyover obligatory span at IOC Junction		0.80%
	Demolition of approaches		0.20%
5	Foundation	25.00%	
	Elevated Rotary Flyover with approaches Foundation upto Ground level		
	a) Open /Pile Foundation- Viaduct and 2 Lane RoB		22.00%
	b) ROB at LC NO.136A- Rotary		3.00%
6	Sub structure of Flyover including Pier/Piercap	23.00%	
	a) Viaduct and 2 Lane RoB		20.00%
	B) ROB at LC NO:136A Rotary		3.00%
7	Super structure of Flyover	30.00%	
	a) Viaduct and 2 Lane RoB		20.00%
	B) ROB at LC NO:136A Rotary		10.00%
8	Construction of Reinforced Earth Structures	4.50%	
	a) Rotary Approaches		3.00%
	b) ROB at LC NO 136A		1.50%

9	Wearing coarse	0.75%	
	On Rotary Flyover and Approaches		0.60%
	On ROB at LC NO:136A		0.15%
10	Construction of Service Road	7.00%	
	At all approach sides including Banasavadi		
	a) Site Clearance/Dismantling		0.25%
	b) Earthwork		0.25%
	c) Drain/Culvert		1.00%
	d) Subbsase GSB/WMM		1.00%
	e) Finishing work		1.50%
	f) Base/Surface work		2.00%
	g)Road marking and Appartunanace		1.00%
11	Defence related works as perscope	0.25%	0.25%
12	Electrical & Illumination	1.00%	
	On Rotary Flyover and Approaches		0.50%
	On ROB at LC NO:136A		0.25%
	c. Service road Portion		0.25%
13	Over all finishing on completion& 30 days after opening for Traffic	1.50%	
	a. Over all finishing Flyover/ROB portion, such as painting, lane marking, gantry etc.		0.75%
	b. Over all finishing Service Road portion, such as painting, lane marking, etc.		0.75%
14	On issue of Completioncertificate	0.50%	
	a) Rotary Flyover portion with Approaches		0.20%
	b) ROB at LC NO 136A with approaches		0.15%
	c) Service road at grade		0.15%
15	During maintenance period	1.00%	
	a) After completion of one year of		0.50%
	a) After completion of second year of		0.50%
	Grand Total	100.00%	100.00%

SECTION 6: SCOPE OF WORK AND DESIGN CRITERIA

Table of Contents	Page No.
1.0 Scope of Work	55
1.1 General	55
1.2 Site	56
1.3 Works to be carried out	56-60
2.0 Design Criteria	60
2.1 General and Approach to Work Site	60
2.2 Benchmarks and Setting out of Works	60-61
2.3 General Requirements	61-62
2.4 Specifications for Design and Codes to be followed	62-63
2.5 Order of Precedence in case of Conflict	63
2.6 Soil Investigation to be carried out by the Contractor	63-64
2.7 Restrictions on Type of Structures	64
2.8 Concept and Alignment plan of Elevated Rotary Flyover and ROB at LC No 136A	64
2.8.1 Elevated Rotary Flyover	64-67
2.8.2 Road Over Bridge	67-68
2.8.3 Design Data	69
2.8.4 Description of Work and Viaduct Provisions for Alternative Proposals	70
2.8.5 Design Loads	70-71
2.8.6 Durability	71-72
2.8.7 Foundation	72-74
2.8.8 Substructure	74
2.8.9 Superstructure	74-77
2.8.10 Bearings below Superstructure	77
2.8.11 Expansion Joint	77
2.8.12 Crash Barrier	78
2.8.13 Drainage	78
2.8.14 Wearing Coat	78
2.8.15 Approach Slab	78
2.8.16 Electrical Works	78
2.8.17 Integrity Test	78
2.8.18 Painting	79
2.9 Load Test	79-80
2.10 Slip Roads, other Surface Level Roads and Junction Improvements	80
2.11 Submission of Elevated Rotary/ROB design Reports for Railway approval	80-81
2.12 Safety precautions and measures to be observed during execution of Elevated	81

Rotary/ROB works in Railway and Adjoining areas		
2.13	Resurfacing / Reconstruction of Surface Level Roads and Providing New Drainage System	81
2.14	Traffic Signs, Markings and other Road Appurtenances	81
2.15	Drainage System	82
2.16.1	Carriageway Improvement Works	82
2.16.2	Paved Pedestrian Crossing	83
2.16.3	Pipe Duct	83
2.16.4	Road Side Drain	83
2.16.4.1	Construction of new RCC Drain covered with new RC Precast Slab	83-84
2.16.5	Kerb	84
2.16.6	Footpath	84
2.16.7	Illumination	84
1.16.8	Traffic Signage and Marking	85
2.16.9	Board display information	85
2.16.10	Project Cost estimate	85-56
3.0	Documentation, Instrumentation, etc.	86-87
4.0	Programme of Submission and Approval of Designs and Drawings	87-88
5.0	Construction Schedule	88
6.0	Site Office	88-89
7.0	Field Laboratory	88-89
7.1	General	89
7.2	For Soils and Aggregates	89
7.3	For Cement and Cement Concrete	89
8.0	Casting Yard	89
9.0	Disputes	90
10.0	Maintenance after Defect liability period.	90

1.0 Scope of Work

1.1 General

The Bruhat Bangalore Mahanagara Palike (BBMP) intends to construct ROB at Byappanahalli, Bangalore including construction of elevated Rotary fly over at IOC junction and construction of road integrating Banaswadi main road and Old madras road to facilitate connectivity to new M.Visvesvaraya terminal at Byappanahalli railway station to improve the accesses to all the directions of road, including construction of Pedestrian underpass at Rotary junction for movement of pedestrians and to decongest the traffic at New Terminal Railway station. As a part of that, BBMP has proposing to build 2- lane uni- directional additional Road Over Bridge at LC NO: 136A at Km 345/800-900 between Bengaluru Cantonment and Baiyyappanahalli Railway station with additional two Obligatory span parallel with existing obligatory span on Right hand and approaches on either sides of obligatory spans with viaduct and RE walls.

In this behest, BBMP is inviting Tenders from the Eligible Tenderers on Turnkey basis based on Tenderer's own Design on the basis of Parameters fixed by the BBMP (Alternate Proposal is permitted and is limited to only one). The Alternate Proposal submitted by the Tenderer shall conform to the Relevant Indian and International Standards satisfying the Key Parameters fixed by the BBMP and shall be approved by the BBMP. Location of the Site is described in section 1.2 below.

Tenderers shall submit only one Proposal. Additional Proposal / s shall result in the Disqualification of the Tenderer.

The Turn key Tender based on Tenderer's own Design shall be inclusive of Cost of Topographic Survey; Geotechnical Investigation and any other Ancillary Investigations / Works and Cost of all Labours; Materials; Casting Yard; Tools and Plants and Machinery required for Fabrications, Launching, completing the various Components of the elevated Rotary with composite super structure of Steel Box Girder at IOC junction connected with Ramps as shown in the concept drawings. Works along with ROB at LC No 136 A with additional 2 obligatory spans with composite I Girder and approaches ; Construction of all ramp approaches for Rotary, ROB including, Drainage Facilities; Signage; Road Marking; Painting of all the Infrastructure developed; Illumination on the Grade Separators . Construction of Medians, Islands, BOX Culverts, compound wall for Defense wing and Railways and Temporary and Permanent Retaining Structures, etc. The Works shall include all Civil, Electrical, Mechanical, all Safety Aspects and any other Works required for the Construction and Completion of the Works in all respects and to the satisfaction of the Employer. The Quoted Rate shall be inclusive of all Taxes, Duties and Levies including Sales Tax, Municipal Taxes, Local Taxes, Octroi, ESI, all Royalties, Patent Rights, other Incidental Charges, and any other Taxes wherever applicable and shall be paid by the Contractor but Excluding GST. GST of 18% or as applicable at the time of payment shall be paid to the tendered amount separately. No claim whatsoever in this regard shall be entertained by the Employer.

1.2 Site

The Construction Site is located about 13km east of Bengaluru Railway station at Byappanahalli at the IOC junction crossing the Railway lane. This junction will operate Major link between Banasavadi and Old Madras Road also Kammanahalli Main Road and Maruthiseva Nagar. The Location of the Project is indicated in **Drawing No. NEZPL/DWG/PRJ/204-1.**

1.3 Works to be carried out

The Works to be carried out under this Turnkey Contract shall include

- a. Preliminary Works like Setting out, Establishing and Maintenance of Permanent Benchmarks, Reference Points and Design , Preparation and obtain Approval of General Alignment of Elevated Rotary with connected Ramps to all the sides of Junction roads with approaches, And General Alignment for Additional Road Over Bridge parallel to existing at LC no 136A nearby New Railway station
- b. Clearing of Site before Commencement of Work including Dismantling of ROB and Its Approaches at proposed rotary location and Site Clearance at Acquired Government and Private Property, if any.
- c. Topographical Survey and Setting out of Works.
- d. **Geotechnical Investigations and taking Trial Bores:** The Geotechnical Investigation Results given in this Document is only indicative and the same is shown in the Tender drawing. The Tenderer shall make his own Assessment and his Lump Sum Offer is for the whole Item of the Work, (All the Items described in this Tender Document and Drawings) and for any Variations observed at Site in respect of Levels and Soil Particulars, etc. The Tenderer's offer is deemed to have been made considering the Actual Ground Conditions at Site and he shall not be eligible for any claim whatsoever. During Execution of the Work, the Contractor shall carry out Geotechnical Investigation as per IRC: 78 at all Piers / Abutments of Rotary and ROB for LC 136A, at Selected Points of Retaining Wall, and at any other Locations required for the Design of the Works in conformity to the Prevailing Norms and Codal Provisions.
- e. The Successful Tenderer, on Award of Work, shall map all the Existing Service Lines, above and below the ground level within the Battery Limit, such as Water Supply, Underground Drainage, Electrical, Telephone, Optical Fibre Cables, etc. Mapping of the Service Lines below the Ground Level shall be carried out using Ground Penetrating Radar (GPR) Equipment. Mapping shall be got approved by all the respective Service Departments at the Risk and Cost of the Successful Tenderer.
- f. Relocation of Utility and Service Lines such as Water Supply, Underground Drainage, Electrical, Telephone, Optical Fibre Cables, etc. those are incidental and obstructing, are to be permanently diverted in an acceptable manner to the Concerned Service Departments so that not to hinder the Services of the Lines at the Cost of the Employer. The Shifting, Supervision Charges, Deposits, if any, to be payable to the Concerned Government Departments shall be borne by the Employer. The Employer will help in Liaising with the Concerned Authorities regarding the Need to shift the Service Lines in case of requirement. Based on his own Investigations as mentioned in the above Clause the Contractor shall make his own Plan for Provision / Diversion of the Service Lines and ascertain the entire Scope of Work and other Required Details by himself and the Employer shall not take any responsibility other than remitting the shifting charges /Liaisoning with the Concerned Departments as stated above. The Time Schedule of 36 (Thirty Six) Months is inclusive of the Period of Utility Shifting also and no Extension of Time would be granted due to Delay in this Work without valid reason. No Monetary Claim in whatsoever manner shall be entertained separately.
- g. Removal and Relocation of Existing Bus Shelters within the Battery Limit, if any, to the Location within or beyond the Battery Limits as approved by the Employer. The employer will bear the costs of removal and relocation.

- h. Shifting of Existing Kerb Stones within the Battery Limit, if any, to the Location within or beyond the Battery Limits as approved by the Employer.
- i. Removal and Relocation of Existing Traffic Signages and Signals within the Battery Limit, if any, to the Location within or beyond the Battery Limits as approved by the Employer.
- j. Removal and Relocation of Existing Hoardings, Advertisement Boards and Appurtenant Structures within the Battery Limit, if any, to the Location within or beyond the Battery Limits as approved by the Employer.
- k. Dismantling of Existing ROB at IOC junction and Disposal of Earth / Debris of existing RCC and Masonry Structures, PCC, existing Road Pavements, RCC / SSM Drainage Structures, Tree Roots, Culverts, Medians, Kerbs, Traffic Islands, Earth Retaining Structures, Ducts, Hoarding and Advertisement Boards and Appurtenant Structures, etc. required for the Execution of the Work.
- l. Construction of Temporary and Permanent Earth Retaining Structures, Compound, Barricade, Fencing, Dewatering, Drainage Facilities and all Temporary Structures wherever required during Construction.
- m. Regarding of existing Ground Levels to achieve the required Vertical Clearance for ROB, Drainages, etc. including Disposal of Excavated Earth and Debris to the Location identified by the Contractor where the same shall not cause Nuisance and shall be acceptable to the Authorities concerned, Construction of Temporary and Permanent Retaining Walls as per the Approval of the Employer.
- n. **Traffic Diversion:** Within project road scope area, the tenderer shall ensure that the Traffic Movement during the Construction of the Works is properly diverted, maintained and obstruction to the Traffic Movement is kept to the minimum. . The Traffic Diversion shall include but not be limited to the following.
 - Prepare Traffic Diversion Plan for different Phases of Construction and got approved from the concerned Police Department by the Contractor.
 - All Necessary Arrangements required for Diversion of Traffic, Erection of Sign Boards, Cautionary Boards and Illumination, etc.
 - Provide Road Markings, Drainage System, and Footpath for the Diversion Roads.
 - Provide Skilled Flagmen for Traffic Diversion as per the Requirement of Concerned Department.
 - Provide Traffic Barricades with Blinkers, Reflective Tapes, Road Delineators, Traffic Cones, Portable Signages, Reflective Lights and other necessary Traffic Signage as required, as directed by the Concerned Authorities and as per the Specification.
 - Provide required Sub Grade and Surface Treatments for the Diversion Roads based on IRC Standards before Traffic Diversion and maintain for the Smooth Flow of Traffic throughout the Construction Period as directed by the Employer. Prior approval of the employer is necessary to considered under special condition clause no 67.
 - After Completion of the Work, the Diversion Roads are to be rehabilitated as per IRC Standards and provided with 40mm Bituminous Concrete irrespective of other Treatments provided earlier during Pre-Construction and Construction Period of the Work if necessary in the opinion of the employer. The employer shall bear the cost under SC Clause 67. The prior approval of the employer is required for consideration under special Condition Clause No. 67.

- It is the responsibility of the Contractor to work out the actual Traffic Diversion Schedule in concurrence with the Requirements of the Concerned Department and execute the same during different phases of Construction.
- Pedestrian Facilities shall be provided for Diverted Roads and the Plan for Pedestrian Facilities shall be got approved from the concerned Police Department by the Contractor.

o. Barricade around the Construction Area

- The Contractor shall be required to keep the Site as Safe and Secure as possible at all times, including the Erection of Site Perimeter Hoarding, which shall also deter trespassers both adult and children alike, as per the Approval of the Employer.
 - The Contractor shall provide a solid two meter high securely erected Barricade including Lights over Barricades at night around the perimeter of the Site as per the Approval of the Employer, with Agreed and Guarded Access and Egress Points for both personnel and vehicles.
 - At each entrance to the Site, the Contractor shall erect a large Billboard warning all persons who enter the Site that they are required to wear the Appropriate Personal Protective Clothing and that no Unauthorized Access is allowable.
 - Wherever the Barricade borders on Pedestrian Footpath, Lightings shall be provided to illuminate the Pedestrian Routes. The Positioning of the Barricade Line shall not reduce the Width of Pedestrian Footpath to less than 900mm.
 - Site Perimeter Barricade shall be washed at least once a month and repainted at least annually.
 - The Site Barricade shall need to be inspected on a regular basis in order to ensure that the Integrity of the Fencing is maintained at all times as far as practicable.
- p. Providing and Erecting Project Information Display Board (minimum size 2.5m X 1.5m) at minimum ten (10) different locations in and around the Project Area as approved by the Employer.
- q. The Successful Tenderer, on Award of Work, shall coordinate with KPWD, NHAI Traffic Police, BDA, BESCOM, BSNL, BWSSB, BMRCL, Indian Railways, K-Ride, KPTCL, BBMP and other Agencies associated with the Construction of Works and comply with their Requirements. The Employer will provide assistance only.
- r. The Successful Tenderer, on Award of Work, shall prepare a detailed General Alignment Drawing for Elevated Rotary with approaches at IOC Railway Junction and for Road Over Bridge at L C No 136 A, in consultation with the concerned Railway Department. Obtain approval for detailed GAD in principle by following the railway procedures by a) submitting GAD Checklist, b) detail estimate of Proposed Circular portion of elevated rotary in ROB portion & Obligatory portion of Railway crossing at LC 136, along with c) detailed soil investigation reports for each column of circular ROB portion duly signed by investigating authority with seal on each page, showing the reduced levels on top of each bore hole and showing SBC of soil of each type of soil strata etc., before commencing work. The Employer will provide assistance only.
- s. Structural design and drawing work for Foundation, sub-structure, super structure, fabrication drawings as per relevant IRC, BIS and other codes for the Elevated Rotary and Road over bridge shall be prepared. However design and drawings along with launching schemes arrangements for non-standard drawings of Railways to be

proof checked by Indian Institute of Technology /Science/National Institute of Technology is mandatory for submission to Railway department at the risk and cost of the Successful tenderer for getting approval for execution.

- t. After proof checking by IIT / IISc / NIT, the tenderer shall get approved the detailed design and drawings of structures of Elevated Rotary and ROB from concerned Railway department and BBMP and prepare Good for construction (GFC) drawings as well as other drawings as required for construction of Elevated Rotary and ROB including approaches and other necessary structures if any.
- u. Construction of Elevated Rotary and ROB at LC No 136A including Foundations, Sub Structure, Super Structure for Via Ducts and Obligatory Span, Composite bridge, Construction of Reinforced Earth Retaining Walls, RCC Retaining Walls, Backfill between RE Walls / Retaining Walls, Soil Stabilization below RE Panels, Filter Media, Kerbs, Crash Barrier, Crash barrier for ROB at LC 136A as per requirements of Defense, Complete Drainage System with Down Take Pipes, Wearing Coat, Water Proofing, Hand Rails to Crash Barriers, Expansion Joints, Bearings, Painting, Deck and Surface Road Illumination, etc. complete in all respects as per MoRT&H / IRC / BIS Specifications.
- v. The Scope shall include all the above Works within the Battery Limit. The Battery Limits for the Junctions are indicated in Concept and Alignment plan drawing no.NEZPL / DWG /PRJ/204-3 for Comprehensive plan of Elevated Rotary and ROB at LC 136A and development of Road corridors works within the Battery Limit.
- w. The scope also includes construction of a compound wall of maximum 300m for defense; 300m for railways boundaries after acquire their land.
- x. Commitment also includes civil work construction if required within the Railway property consist of a) Sewerage primary plant consist of Primary treatment consists of Equalization tank, flash mixer, clariflocculator, rapid gravity filter, disinfection tank and the sludge drying bed for approximate area of 4 sqmt up to limit of 100 KLD capacity b) Electrical control room for signal with a maximum area of 144 sqmt. c) Re construction of Railway Gowdan which is now abandoned, needs to be relocated and to be newly constructed as per plan of Railways with maximum of 210 sqmt.
- y. Providing Gantry, Traffic Signals, Traffic Signages, Road Marking and Granite name plate engraver along with necessary Pedestals, Foundation Stone, Stone for Inauguration Ceremony as per Specifications and as per the Approval of the Employer.
- z. Necessary Drainage Arrangement as per Specification. The Levels and Dimension Details for Drainage Arrangement shown in the Tender Drawing are only indicative. The Contractor shall carry out the required Hydraulic Study and work out the Levels and Dimension Details for Drainage Arrangement based on the Hydraulic Study and get the Drawing approved by the Employer before Execution.
- aa. Set up of Field Laboratory.
- bb. Adequate Street Lighting / Junction Lighting Arrangements as approved by the Employer during Construction.
- cc. **Removal / Disposal:** Removal / Disposal of Excess / Disused Earth, Soils, Debris and Materials from the Construction Site. Further, it is the responsibility of the Contractor to identify the Dumping Yard Location and to dispose the Excess / Disused Earth, Soils, Debris and Materials to the same identified Dumping Yard where the same shall not cause Nuisance and shall be acceptable to the Authorities concerned.
- dd. Dewatering in Foundation, Trenches, Drainages, wherever required, and pumping out to Locations as directed by the Employer.
- ee. All Necessary Safety Measures / Precautions to be adopted at Site as per the Instructions of the Employer.

- ff. Providing and maintaining Furnished Site Office for the Supervisory Staff of the Employer and his approved Representative.
- gg. Making good the Road Surface as per IRC Standards, which are damaged / worn out during Construction of the Work and restoring the same to the Original Status.
- hh. Any other Items of Works, which are not specifically enumerated in the Tender Document, but required for Functioning of all the Infrastructures Developed and as per the Directions of the Employer.
- ii. Construction of Architectural Features required for Good Aesthetics of the Infrastructure developed.
- jj. Painting with Approved Colour, Shade, Make and Type shall be provided for the various Elements as per the Specifications given in the Tender Document.
- kk. The Contractor shall ensure Cleanliness of the Work Area and its surroundings by deploying Man Power for the same. The Contractor shall have to ensure proper Brooming, Cleaning and Washing of Work Area till the Currency of the Contract including Disposal of Sweepage. Nothing extra shall be payable on this account
- ll. Cleaning of the Site after Execution and before handing over the Project to the Employer.
- mm. Maintenance of all the Infrastructural Facilities developed for a Defect Liability Period of 24 months, which will run concurrently from the Date of the Physical Completion of the Project and on issuance of Completion Certificate by the Competent Authority and for a Maintenance Period of 24 months, which will run concurrently from the next day of Completion of Defect Liability Period and on issuance of Defect Liability Completion Certificate by the Competent Authority. For maintenance of steel bridge and other components refer Indian Railways Bridge Manual-1998
- oo. The detailed scope of work shall be finalized at the time of award of work and the tender document also forms part of the contract document

2.0 Design Criteria

2.1 General and Approach to Work Site

The General Site Particulars are shown in the Topographical Map. Refer Tender Drawings no. NEZPL/DWG/PRJ/204-2

2.2 Benchmarks and Setting out of Works

- a. The Standard Benchmark and its Reduced Level with reference to which the Work shall be carried out is the GTS Benchmark available nearest to the Site. The Employer does not take the responsibility about the Correctness of the Levels indicated in the Drawings. The Contractor has to establish at least fifteen Benchmarks in the Site of Works with Reduced Levels clearly marked on them. The Contractor shall be solely responsible for the accuracy of the Benchmark Levels and for maintaining the same throughout the Contract Period.
- b. The Works shall be set out in accordance with the Drawings approved by the Employer.
- c. The Contractor shall be responsible for the True and Proper Setting out of the Works and for the Correctness of the Positions, Levels, Dimensions and Alignments of all Parts of the Works and for the Provision of all Necessary Instruments, Appliances and Labours in connection therewith. The Contractor shall give at least 48 hours' notice to the Employer of his intention to set out or give Levels.
- d. If at any time during the Progress of the Work, any Error appears or arises in the Positions, Levels, Dimensions and Alignments of any part of the Work, the Contractor shall at his own expenses and risk, rectify such Errors to the satisfaction of the Employer.
- e. The Checking of any setting out of any line or level by the Employer or his approved Representative shall not relieve in any way the Contractor of his responsibility for the Correctness thereof and he shall carefully protect

and preserve all the Benchmarks, Site Rails, Pegs and other Things used in the setting out of Works.

- f. All Duties concerning Establishment of a Set of Benchmarks, Permanent Stations, Centre Line Pillars, etc. for performing all the Functions necessary at the Commencement and during the Progress of Work till the Physical Completion of all the Items of the Work in question, shall be carried out by the Contractor at his own risk and cost.
- f. The Centre Line of the Elevated Rotary and its approaches, ROB, Piers of Flyovers, Abutments, RE Walls, Surface Level Roads / Slip Roads, Corridor, Electrical room for Railways, Drainage Facilities and the Foundations shall be established by Total Station Equipment and the Centre Line Marks shall be engraved on smoothly finished masonry or concrete pillars of such dimensions and constructed at such intervals and places as may be directed by the Employer or his approved Representative and shall be maintained in proper manner throughout the Period of Construction. The Contractor shall submit a Drawing showing the Alignment of Elevated Rotary Flyovers, Road Over Bridge, Surface Level Roads / Slip Roads, Corridor and Drainage Facilities within 15 (fifteen) days from the Date of Signing of Agreement.
- g. He shall also keep proper Record of such Permanent Benchmarks established denoting therein their Correct Levels.
- h. The Work of Establishment of all such Benchmarks shall be carried out by only experienced and skilled staff of the Contractor with the help of precise instruments suitable for this type of Work. The instruments used shall be checked for their accuracy and for permanent adjustments before the commencement of the Work and also at frequent intervals during the progress of the Work.
- j. All such Benchmarks established by the Contractor shall be subject to check and approval of the Employer or his approved Representatives. If any Variations noticed in the Work as result of improper establishment or maintenance of such Benchmarks, it shall be rectified at the Contractor's own Risk and Expense.

2.3 General Requirements

In order that the Tenderer's Proposal qualifies as an Alternative Design, it shall generally fulfill the following Requirements.

- a. It shall ensure Soundness of the Structure, its Durability and Aesthetics as a whole in harmony with the surroundings. A Report on the Aesthetic Aspect shall be compulsorily in the Technical Bid.
- b. It shall ensure Speedy and Practicable Construction.
- c. It shall lead to Appreciable Economy in the Design.
- d. It shall be accompanied by Detailed Drawings and Detailed Description of Work and Specification of Materials and Items. If called upon, the Tenderer shall explain his Proposal through Power Point Presentation during Tender Evaluation Stage before Opening of Financial Bid.
- e. At the time of Detailed Design, the Contractor shall not deviate from the Basic Scheme proposed by him for the purpose of Tender. At the same time, it is mandatory on the part of the Contractor to strictly adhere to all the Geometric Details indicated in the Tender Drawing. The Length of the Ramp could marginally change based on Structural Scheme and Designs after Approval by the Employer.
- f. The Alignment of the Elevated Rotary Flyovers, Road Over Bridge, Surface Level Road and Drainage Facilities, Electrical/Godown rooms building and ancillary works for Railways , compound wall shown in the Drawings appended with the Tender Document shall be followed by all the Tenderers, and if Any alteration / modifications in alignment plan is proposed by the bidder in the better way resulting with further reduction of

- the cost of land acquisition and project cost will be subjected to employer approval,
- g. The Superstructure shall have required numbers of Expansion Joints for better Riding Surface.
 - h. Only Single Pier Type Structure shall be considered for Elevated Rotary Flyovers, Pier Shape shall be aesthetically pleasing, preferably elliptical / circular / ornamental Piers of Classical Design, etc. In this regard, the Decision of the Employer is final and binding.
 - i. The Tenderer shall note that it is a Requirement for Qualification that the Works warrant that the Structure proposed shall be aesthetically pleasing and easy to maintain considering the Importance of the Work Location.

2.4 Specifications for Design and Codes to be followed

The Design of Structural Components of all the Works shall conform to the Relevant Specifications and Criteria laid down in the following Latest Indian Road Congress Publications with Amendments / Revisions issued up to the Date of Issue of Notice Inviting Tenders.

The Hierarchy for the following Codes of Practice is as follows:

a.

- IRC: 5 : General Features of Design
- IRC: 6 : Loads and Stresses
- IRC: 15 : Construction of Concrete Roads
- IRC: 18 : DESIGN Criteria for Pre-stressed Concrete Road Bridges (Post-Tensioned Concrete)
- IRC: 21 : Standard Specifications and Code of Practice for Road Bridges.
- IRC: 22 : Composite Construction (Limit State Design)
- IRC: 24 : Steel Road Bridges
- IRC: 35 : Road Markings
- IRC: 37 : Design of Flexible Pavements
- IRC: 38 : Design of Horizontal Curves for Highways and Design Tables
- IRC: 39 : Standards for Road-Rail Level Crossing (I Revision).
- IRC: 44 : Cement Concrete Mix Design for Pavements
- IRC: 54 : Lateral and Vertical Clearances at Underpasses for Vehicular Traffic
- IRC: 58 : Design of Plain Jointed Rigid Pavements for Highways
- IRC: 65 : Recommended Practices for Traffic Rotaries
- IRC: 67 : Road Signs
- IRC: 71 : Abbreviations and Symbols in Documents and Plans.
- IRC: 78 : Foundation and Substructure
- IRC: 79 : Road Delineators
- IRC: 83 : Metallic Bearings
(Part I)
- IRC: 83 : Elastomeric Bearings
(Part II)
- IRC: 83 : POT, POT cum PTFE, PIN and Metallic Guide Bearings
(Part III)

IRC: 86	: Geometric Design Standards for Urban Roads in Plains
IRC: 92	: Designs of Interchanges in Urban Areas
IRC: 103	: Pedestrian Facilities
IRC: 112	: Concrete Road Bridges
IRC: SP: 19	: Manual for Survey, Investigation and Preparation of Road Projects.
IRC: SP: 23	: Vertical Curves for Highway
IRC :SP: 37	: Guidelines for Evaluation of Load Carrying Capacity of Bridges.
IRC: SP: 42	: Road Drainage
IRC: SP: 50	: Urban Drainage
IRC: SP: 56	: Steel Pedestrian Bridges
IRC: SP: 57	: Quality Systems for Road Construction
IRC: SP: 90	: Manual for Grade Separators and Elevated Structures
MoR	: Indian Railways Bridge Manual-1998
IS: 2911	: Pile Foundations
(All Parts)	

The Latest Revision of the above Codes shall be followed.

- b. Any IRC Standard Specifications and Codes of Practice or Criteria for Road Bridges other than "a" above, but published upto the Last Date of the Issue of Notice Inviting Tender.
- c. For any Item not covered by "a" and "b" above, MoRT&H Specifications for Road and Bridge Works published by Ministry of Surface Transport (Roads Wing), Government of India (Latest Edition).
- d. For Items not covered by any of the "a", "b" and "c" above, Standards and Specifications, Provisions of Bureau of Indian Standard (BIS) Codes of Practice.
- e. IRC: SP: 33 Guidelines on Supplemental Measures for Design, Detailing and Durability of important Bridge Structures (if applicable).
- e. For Items not covered by any of the above Standards and Specifications, Sound Engineering Practice and Provisions of Relevant Codes of other Nations shall be referred. In this regard, Decision of the Employer shall be final and binding on the Contractor.

2.5 Order of Precedence in case of Conflict

In Case of Conflict between different parts of Tender Document, the following Order of Precedence shall prevail.

1. Design Criteria as specified in Tender Document.
2. Instructions to Tenderers.
3. Special Conditions of Contract.
4. General Conditions of Contract.
5. MoRT&H / IRC Specifications.
6. Codes of Practice.

2.6 Soil Investigation to be carried out by the Contractor

The Contractor shall carryout complete Soil Investigation at his own risk and cost. The Boreholes shall be taken at

the Final Locations of each Pier / Abutment, at Selected Points of Retaining Wall, at elevated Portion of Rotary/Road Over bridge and at any other Locations required for the Design of the Works prior to the Commencement of the Work to ascertain the Levels of Rock and its Quality, to obtain SBC at different Depths, Soil Stratification, Ground Water Table, etc. The Termination Level of the Borehole shall be determined by conducting SPT Tests. Three consecutive SPT Tests at an interval of 1.5m each with 'N' values greater than 100 shall be carried out before termination. If rock is encountered, Drilling shall continue upto 3m in rock with Rock Samples taken for Testing. All the Soil / Sub Soil Investigations and its Frequency shall be strictly in accordance with the Relevant Codal Provisions.

- a. During Execution of the Work, the Samples from the Bore taken at each Foundation shall be tested and analyzed in the Laboratory approved by the Employer for establishing Design Parameters. Tests such as Standard Penetration Test, Compression and Shear Test on Undisturbed Soil Samples, Pressure Meter Test, Crushing Strength of Rock, California Bearing Ratio (CBR) Test, Plate Load Test, etc. shall be carried out in conformity with the MoRT&H Specifications. The Contractor shall submit the entire Data to the Employer along with his own / Laboratory Recommendations and obtain approval for the Design Parameters. Necessary Interpretation of the Result of Tests shall be furnished to the Employer for scrutiny of Design of Foundations.
- b. The Cost of these Tests and Interpretation of the Test Results shall be considered, as incidental to the Main Work and the same shall be included in the Tendered Amount.
- c. While checking the Stresses at the Base of Foundations, it shall be ensured that under the Worst Combination of Forces no Tension is permitted. The Safe Bearing Capacity at the Foundation Level shall be verified during Construction so that to ensure that the Stresses imposed on the Foundation Strata are within Permissible Limits.

2.7 Restrictions on Type of Structures

The following Types of Structural Arrangements shall not be permitted.

- a. Structures, which require imported material of major quantity for which foreign exchange will have to be arranged by the Employer.
- b. A Design in which Stability of one or more Span is endangered due to the Failure of some other Span / Spans.
- c. Concrete Structures with Hinges / Half Joints / Articulations.
- d. Super Structures with Joints at the tips of long cantilevers with Hinges including Pendulum Type Bearings, Gap Slab, etc.
- e. Transversely Continuous Wide Deck resting on separate Foundations at Support Locations.
- f. Piers in the form of Multiple Columns or "Y" Columns.

2.8 Concept and Alignment plan of Elevated Rotary Flyover and ROB at LC No 136A

The concept and alignment plan of elevated rotary proposed at IOC junction with its approaches integrating with at grade road proposal up to NH junction at old madras road including proposal of New ROB at LC No 136 has been prepared and enclosed as stated elsewhere. Concept plan with alignment is prepared keeping in view of minimum land acquisition both in private and government properties. The land acquisition plan no NEZPL/DWG/PRJ/204-5 also enclosed to understand the proposed right of way. The successful tenderer shall follow the concept plan for profile design within the proposed right way shown in LA plan without changing the concept. If there is any deviation in concept plan by minimizing the structural length as per the site condition up to the limit of 500m as decided by employer, contractor shall obtain prior approval from BBMP before commencement of design under this contract.

2.8.1 Elevated Rotary Flyover and Pedestrian Underpass

An elevated rotary of Four lanes unidirectional type flyover has been proposed at IOC Railway Junction where rail

crosses the sub arterial road of Banasavadi- Maruthisevanagar in one direction and Kammanahalli to Old madras road in another direction which connects the Outer Ring road and National Highways 4 & 7 respectively and junction is very close to New Baiyappanahalli terminal Railway Station are proposed within the railway boundary near the junction. The rotary has been designed to connect the four arms of the cross road with approaches. The Salient Features of the Elevated Rotary Flyovers with Approaches are given below. Lengths of approaches shown below are tentative and may vary depending on ground levels at the time of detailed design.

➤ **Elevated Rotary at IOC Junction**

Number of Lane	: 4 lanes unidirectional
Total width of Elevated Rotary	: 15.0m
Minimum Carriageway Width	: 14 m
Minimum Vertical Clearance	: 6.525m
Radius of the Rotary	: 32.50m
Circumferential length at C/L of Rotary	: 255.0m
	: 1 x 81.31m
Viaduct Span with Steel Box Girder	: 1 x 68.50m
	: 1 x 56.00m
	: 1 x 48.00m
Shape of Steel Box Girder	: Trapezoidal shape Open at Top
Number of Box Girder at each span	: 3

Further, Length of elevated rotary viaduct span has been fixed in consultation with sub-urban railway department K-Ride to minimize the interference of Piers with the proposed railway lane and to minimize the railway land at grade. Length of Viaduct Span shall be maintained with all other Requirements such as Protection to the Piers, etc. as indicated in the Tentative General Alignment Drawing no. NEZPL/DWG/PRJ/204-4 - 1 to 4 including Plan and Section details of all the Railway Spans. Further, Extra Widening of Carriageway at Curve Portion as per IRC: 86 with Design Speed of 30 kmph shall be provided.

➤ **Approaches to Elevated Rotary at IOC Junction**

➤ **Four lane Up/Down ramp approach to Rotary from Banasawadi road**

Number of Lane	: 4 lanes divided bi- directional
Total Width of approaches	: 17.0m
Minimum Carriageway Width	: 2 X 7.5m
Median	: 1.0m
RCC Crash barrier	: 2 x 0.5m
Maximum Vertical Gradient	: 5% (1 in 20)
Length of Approaches	: 205.0 m
Length of Viaduct Span	: 4 x 30.00m
Length of End spans	: 1x20.0m
Length of Solid Ramp	: 65.0 m

➤ **Two lane Up ramp approach to Rotary from Banasawadi road**

Number of Lane	: 2 lanes uni- directional
Total Width of approaches	: 8.5m
Minimum Carriageway Width	: 1 X 7.5m
RCC Crash barrier	: 2 x 0.5m
Maximum Vertical Gradient	: 5% (1 in 20)
Length of Approaches	: 205.0 m
Length of Viaduct Span	: 4 x 30.00m
Length of End span	: 1x20.0m

-
- | | |
|----------------------|----------|
| Length of Solid Ramp | : 65.0 m |
|----------------------|----------|
- **Up/Down ramp approach to Rotary from Kammanahalli side**
- | | |
|---------------------------|-----------------------------------|
| Number of Lane | : 4 lanes divided bi- directional |
| Total Width of approaches | : 17.0m |
| Minimum Carriageway Width | : 2 X 7.5m |
| Median | : 1.0m |
| RCC Crash barrier | : 2 X 0.5m |
| Maximum Vertical Gradient | : 5% (1 in 20) |
| Length of Approaches | : 205.0 m |
| Length of Viaduct Span | : 4 x 30.00m |
| Length of Solid Ramp | : 85.0 m |
- **Down ramp Towards Baiyappanahalli Terminal Railway station & Up ramp to Rotary from Indiranagara (Old Madras road)**
- | | |
|---------------------------|---------------------------|
| Number of Lane | : Two lane unidirectional |
| Total Width of approaches | : 8.50m |
| Minimum Carriageway Width | : 2 X 3.5m |
| RCC Crash barrier | : 2 X 0.5m |
| Maximum Vertical Gradient | : 5% (1 in 20) |
| Length of Approaches | : 205.0 m |
| Length of Viaduct Span | : 4 x 30.00m |
| Length of End spans | : 1x20.0m |
| Length of Solid Ramp | : 65.0 m |
- **Central Down ramp from rotary to Baiyappanahalli Terminal Railway station beyond and towards Old Madras road**
- | | |
|---------------------------|---------------------------|
| Number of Lane | : Two lane unidirectional |
| Total Width of approaches | : 8.50m |
| Minimum Carriageway Width | : 2 X 3.5m |
| RCC Crash barrier | : 2 x 0.5m |
| Maximum Vertical Gradient | : 5% (1 in 20) |
| Length of Approaches | : 1150.00 m |
| Length of Viaduct Span | : 33x 30.00m |
| Length of Solid Ramp | : 160.0m |
- **Up/Down ramp approach from Rotary to Maruthisevanagara road**
- | | |
|---------------------------|-----------------------------------|
| Number of Lane | : 4 lanes divided bi- directional |
| Total Width of approaches | : 17.0m |
| Minimum Carriageway Width | : 2 X 7.5m |
| Median | : 1.0m |
| RCC Crash barrier | : 2 x 0.5m |
| Maximum Vertical Gradient | : 5% (1 in 20) |
| Length of Approaches | : 1496.0 m |
| Length of Viaduct Span | : 47 x 30.00m |
| Length of Solid Ramp | : 86.0 m |

Typical Cross Section of Approaches to Rotary are shown Tender Drawings attached.
Extra Widening of Carriageway and Super Elevation at Curve Portion as per IRC: 86 with Design Speed of 30 kmph shall be provided.

Pedestrian Underpass

The facility of footpaths for pedestrian movements has not been proposed on elevated rotary/approaches to avoid pedestrian conflicts with vehicular traffic. To facilitate pedestrians to cross the railway line, a separate pedestrian underpass is proposed below the rotary to meet the railway safety requirements.
The Salient Features of the Pedestrian Underpass with Approaches at Railway crossing are given below.

➤ **Proposed Pedestrian Underpass**

Length of Pedestrian Underpass	: 152m (considering future track)
Type of Structure	: RCC Box type
Width of PUP	: 5.2M
Clear height of PUP	: 2.75M
Earth cushion over slab	: 0.5m
Rail with Ballast on earth cushion	: 0.75m
Entry/Exist to PUP	: Steps and Ramp width of 1.2m

Typical Cross Section of PUP at IOC Junction Railway Crossing Below Rotary is enclosed in the Tender drawing.

2.8.2 Road Over Bridge

Additional Road Over bridge is proposed for LC No:136A at KM 345/800-900 between Bengaluru Cantonment and Baiyappanahalli Railway Station. Railway department has recently constructed Road Over Bridge for this LC No: 136A with two lane configurations, BBMP and Railway is now taken up to construct additional Road Over Bridge with same configuration of existing one which has constructed recently. Obligatory span is with composite girders with two spans at railway lane portion are proposed as existing ROB on RHS. The Salient Features of the New ROB with Approaches and Additional composite girder at Railway crossing are given below

➤ **Proposed Road Over Bridge at LC No: 136A on LHS of Existing Obligatory span** **Obligatory Railway Span**

Number of Lane	: 2 lanes unidirectional
Number of Span	: 2 x 35m
Total width of ROB	: 12.0m
Minimum Carriageway Width	: 1 X 7.5m
Kerb	: 2 x 0.55
Footpath	: 2 x 1.5m
Crash Barrier	: 2 x 0.20m
Vertical Clearance	: 6.525m
Camber (bi-directional)	: 2.5%

Approaches to Obligatory Railway spans

a) Towards Byyappanahalli Railway station

Total Length of Approach	: 175.0m
Viaduct Length	: 91.5m
RE- Wall Solid approach	: 83.5m
Number of Viaduct Span	: 3 x 30.5m
Number of Lane	: 2 lanes unidirectional
Total width of Approach	: 8.5m
Minimum Carriageway Width	: 2 X 3.25m
Crash Barrier	: 2 x 0.5m
Vertical Clearance	: 6.525m

Maximum Vertical Gradient : 5% (1 in 20)

b) Towards Old Madras side

Total Length of Approach : 465.0m
Viaduct Length : 274.5m
RE- Wall Solid approach : 190.5m
Number of Viaduct Span : 9 x 30.5m
Number of Lane : 2 lanes unidirectional
Total width of Approach : 8.5m
Minimum Carriageway Width : 2 X 3.25m
Crash Barrier : 2 x 0.5m
Vertical Clearance : 6.525m
Maximum Vertical Gradient : 5% (1 in 20)

The Structural Configuration for the Road Over Bridge and Approaches is shown in Tentative General Alignment **Drawing no NEZPL/DWG/PRJ/204-4-5 to 6 .**

The Design Criteria and Viaduct Requirements to be adopted for the Tenderer's Proposal are furnished in the next Section. The Viaduct Portion for Rotary, ROB and Approaches Span shall not be less than as indicated in the **Drawing No. NEZPL/DWG/PRJ/204-4-1 to 4 for ROTARY Junction and Drawing No. NEZPL/DWG/PRJ/204-5 to 6 for ROB at LC No 136A** respectively and shall have a Minimum Vertical Clearance of 6.525 m between bottom level of Soffit and Rail Formation Level.

The Work of Construction of Elevated Rotary Flyovers and ROB to be carried out under this Contract Shall include the following.

- a. Construction of Elevated Rotary Viaduct and its approaches and ROB AT LC 136A viaduct and its approaches complete with Disposal of Surplus Earth; Wearing Coat over Deck; Crash Barrier with Railing over it; Construction Joint; Expansion Joints between Viaducts, Approach Slab, etc. and complete as per Specifications mentioned in the Tender Document.
- b. Construction of Reinforced Earth Retaining Walls along with Approach Slabs, Friction Slabs; Pavement over Earth Filling and Ramp Terminal on either side; Side Drains for the Approaches as per the Requirements; Backfilling with Filter Media, Retaining Walls as per the Requirement; Disposal of Surplus Excavated Earth; Crash Barriers with Railing; Expansion Joints in Retaining Walls, Approach Slabs, etc. as per the Specifications mentioned in the Tender Document.
- c. Wearing Coat of the Deck Portion of the Flyovers/ROB comprises of 25mm thick Mastic Asphalt and shall be placed before Laying of 40mm Bituminous Concrete (BC) after the Application of Tack Coat.
- d. The Pavement for Solid Ramp Portion is flexible and crust shall comprise of 500mm Subgrade, 200mm thick Granular Sub Base (GSB), 250mm thick WMM with an asphalt layer of 80mm thick DBM & 40mm BC.
- e. Steel crash barrier raised over RCC crash barrier ramp towards old madras road side for ROB at LC 136A in defense land as per requirement of Defense.
- f. Construction and Painting of Kerbs, Steel Girders, Concrete Structures of Rotary & ROB, Providing Over Head Gantry at all 4 sides approaches and 2 sides at ROB locations, Traffic Signage's, Road Marking such as Lane Marking, Direction Marking, etc. as per the Specifications mentioned in this Tender Document.
- g. Illumination above and below Flyovers as per the Specifications mentioned in this Tender Document.

2.8.3 Design Data

Design of Elevated Rotary Flyovers/Approaches/ROB shall be based on latest IRC / BIS Codes, Special Publications by IRC, relevant and latest Ministry Circulars and Latest Edition of MoRT&H Specifications.

a. **Location**

The Locations of the Elevated Flyovers and Road Over Bridge are given in the Drawings as mentioned in Clause No. 1.2 of this Section.

b. **Type of Bridge**

Elevated Rotary flyover is proposed for design as curved bridge with Steel box Girder of Trapezoidal in shape is proposed as the span arrangements are more than 50m and longest is 82m. The torsional properties of the closed section is advantageous in this type in reducing and simplifying the support arrangements and are also extremely efficient in carrying torsional loads found in this type of curved bridge and these bridges special analysis and detailing are required.

Type of bridge proposed for ROB at LC no 136A is composite I Girder.

c. **Road Geometrics**

Elevated Rotary Geometrics should be based on IRC: 65 Recommended Practices for Traffic Rotaries. The Standards for Road Geometrics adopted in the Design of the Viaducts and Ramps should be essentially based on IRC: 92 "Guidelines for the Design of Interchanges in Urban Areas" and the Salient Features are as follows.

i. **Vertical Gradient**

Maximum allowable Vertical Gradient for all Entry and Exit Ramps shall be limited to **5% (1 in 20)**.

ii. **Clearances**

Minimum Vertical Clearance between Rail Formation Level and bottom level of Soffit of Elevated Rotary Flyovers/ROB shall be 6.525m as per Hand book on Railway Construction under clause 10.2.2 selection of ROB/RUB Parameters mentioned at Page no 369.

iii. **Elevated Rotary Design**

Rotary design should be based on the traffic operations of diverging, merging and weaving. The design elements include design speed, radius at entry, exit and the central island, weaving length and width, entry and exit widths should be as per IRC-65. The Radius of Rotary should be designed with minimum radius of 1.3 times of entry curve. The entry to the rotary should not be straight, but a small curvature of about 20 and 25 metres to be introduced. The exit radius should be 1.5 to 2 times than the entry radius of the rotary so that the vehicles will discharge from the rotary at a higher rate. The width of the weaving section should be higher than the width at entry and exit preferably between 6 to 18m and weaving length available at the intersection should be between 18 to 90m. The traffic rotary shown in concept and alignment drawing no NEZPL/DWG/PRJ/204-3 is designed as per standards and is reducing the complexity of crossing traffic by forcing them into weaving operations.

d. **Minimum Viaduct Span**

Minimum Span of Viaduct adopted shall not be less than as indicated in the **Drawing No. NEZPL/DWG/PRJ/204-4-1 to 4 and Drawing No. NEZPL/DWG/PRJ/204-5 to 6** respectively for **Rotary and ROB** and shall be approved by the Employer.

e. **Obligatory Span**

Minimum Length of Obligatory Span for Railway Crossing shall be as shown in the **Drawing No. NEZPL/DWG/PRJ/204-4-1 to 4 and Drawing No. NEZPL/DWG/PRJ/204-5 to 6**

f. Requirement of Steel Box Girder

The recommended minimum web depth for web girder is 1.5m is requirement for inspection accessibility. The minimum width for the girders bottom flange width is 1.2m to allow for workers to complete fabrication of various internal girder details. The average distance center to center of flanges of adjacent boxes shall not be greater than 1.2 times and not less than 0.8 times the distance center to center of the flanges of each box.

Bottom tension flanges is designed with 30mm thick and web plate with 30mm (may varies as per actual), the minimum thickness of web plate should not be less than 8mm. Girders should be designed with Internal K-Frames to control distortion of the box girder. The provision of opening in the middle facilitates access in walking down the middle of the box during construction or routine maintenance inspections. Wide flanges also need to be stiffened to carry sufficient load and to avoid buckling.

Steel work of girders should be Metalizing with sprayed aluminum after surface preparation by Sand/grit blasting, followed by one coat of etch primer (IS:5666) & one coat of Zinc Chrome primer (IS:104) and two coats of aluminum paint (IS:2339) duly conforming to all relevant specifications and process given under Clause 39 of IRS-B1-2001.

Since Rotary is significant plan curvature, single bearings of spherical type be used at all supports, since the curvature of the line of supports generates torsional restraint.

The Initial design of Steel Box Girder is detailed in Drawing No NEZPL/DWG/PRJ/204-4-1 to 3

2.8.4 Description of Work and Viaduct Provisions for Alternative Proposals

a. Alignment and Location

The Alignment, Longitudinal Section and Obligatory Portion should be in accordance as shown in **Drawing No. NEZPL/DWG/PRJ/204-4-1 to 4 and Drawing No. NEZPL/DWG/PRJ/204-5 to 6** Respectively for Rotary and ROB and shall be got approved by the Employer.

b. Layout of Flyovers

The Layout of Flyovers shall satisfy the following criteria as indicated on the enclosed Drawings and Supplementary Data.

- i. Minimum Vertical and Horizontal Clearance in the Rail Location.
- ii. Minimum Length to be covered by Open Spans as required from Consideration of Aesthetics and from Visibility for Low Level Traffic.
- iii. Ruling Gradient.
- iv. Minimum Length of Summit Curve as 30.00m and Valley Curve as 30.00m shall be adhered to.
- v. Any other Criteria as shown on the Drawings.

c. Road Level on the Flyovers and Roadway Particulars

- i. The proposed Road Particulars and Carriageway Widths shall be as per **Drawing No. NEZPL/DWG/PRJ/204-4-1 to 4 and Drawing No. NEZPL/DWG/PRJ/204-5 to 6** Respectively for Rotary and ROB.
- ii. The Vertical Profile of the Finished Surface of Deck Slab and Wearing Course shall be in the form of a smooth curve where change in Gradient occurs. The Design of Curves (Vertical / Horizontal) shall be approved by the Employer. The Design Speed shall be 40 km / hr. Super Elevation, Camber and Widening on Curves shall be suitably considered. Super elevation need not be provided for elevated rotary flyover.

2.8.5 Design Loads

a. Live Load

The Elevated Rotary Flyovers shall be designed as per IRC: 6 (Latest Edition).

b. Wind Forces

Wind Forces shall be considered as per IRC: 6 (Latest Edition).

The Appropriate Wind Force on 9m high Lighting Pole @ 25 m c / c shall be considered in the Design.

c. Seismic Force

The Flyovers shall be designed for Appropriate Seismic Force as per the Provisions of IRC: 6 (Latest Edition).

d. Earth Pressure

i. The Soil Properties for Embankment shall be in accordance with MoRT&H Specification. The Properties of Embankment like Dry Density of Soil 1.85 t / cum; Saturated Density 2.00 t / cum.; $\Phi = 300$ and $C = 0$ shall be considered for Tendering Purpose. At the time of preparation of Final Design, Soil Parameters shall be considered based on the Test Results of the Approved Material.

ii. Saturated Density of the Backfill (minimum 2 t / cum.) shall be considered for calculating Active Earth Pressure for Tendering Purposes.

e. Temperature Range

i. For Design of Structure to account for Temperature in Formula, $(DL) = \alpha L t$

The value of "t" shall be $\pm 17^{\circ}\text{C}$

Where α = Coefficient of Expansion or Contraction

L = Length of the Member

(DL) = Expansion / Contraction due to Temperature Variation in appropriate Units.

ii. The Superstructure shall also be designed for Effects of Distribution of Temperature across the Deck Depth. For Calculation of Thermal Forces Effect of 'E' Value of Concrete shall be taken as 50% of the Instantaneous Value so that to account for Effects of Creep on Thermal Strains.

2.8.6 Durability

a. Minimum Grade of Concrete shall be as below.

PCC for Levelling Course	M15
RCC for Open Foundation, and Sub Structure and Super Structure	M35
RCC for Super Structure	M45
RCC for Pile and Pile Cap	M35
Prestressed Concrete	M45

b. Minimum Cement Content, Diameter of Bar and Cover Requirements

For Plain Cement Concrete (PCC), Reinforced Cement Concrete (RCC) and Pre Stressed Concrete (PSC), the Value given below regarding Minimum Cement Content and Maximum Water Cement Ratio shall be followed.

Plain Concrete		RCC / PSC	
Minimum Cement Content Kg / cum.	Maximum Water Cement Ratio	Minimum Cement Content Kg / cum.	Maximum Water Cement Ratio
240	0.45	420/440	0.45 / 0.40

c. The Minimum Nominal Diameter of Reinforcement shall be 8mm.

- d. The Minimum Clear Cover to Reinforcement for all Grades of Concrete shall be as below.

Structural Element	Clear Cover
Slab	40mm
Web / Column	40mm
Footing / Raft slab	75mm
Cable Duct	75mm
Pile Foundation	75mm

2.8.7 Foundation

Planning of foundations: Deep foundations are, in general, costlier as compared to the open foundations. The Elevated Rotary and ROB locations don't have water flowing around them, so scour is not a concern and the depth of foundation can be kept smaller also. If the soil conditions dictate or there is some other advantages like ease of construction, reduction in duration of caution order, during that time must go in for deep foundations like piles. If such constraints are not there open foundations shall be adopted, if feasible from bearing capacity considerations.

a. General

The Soil strata at the location of construction of Elevated Rotary and Road over Bridge at LC No: 136A is very hard and stiff with Non- cohesive soil. As could be seen from the geotechnical investigation indicated in the tender drawing, the hard strata could be seen below the ground at a depth of 3-6m with N- value greater than 100. At few locations the hard strata starts varies to a depth of 10 to 13m.

Generally, Open foundation is considered to the extent of twenty five percent of foundation for sub structures and balance area where strata of good bearing capacity is not available near the ground, the space is restricted to allow for spread/open foundation, in those cases the foundation of the structure has to be taken deep with the purpose of attaining a bearing strata which is suitable and which ensures strictly and durability of structure. The details of the deep foundation to be provided and Open foundations are given below.

The Piles shall be bored Cast – in – Situ type and socketed into rock. The Construction of Pile Foundation shall conform to relevant Specifications of IS: 2911 unless specified otherwise in the Documents.

b. Quality of Pile Concrete, Pile Caps, etc.

The Grade of Concrete for the Pile shall be minimum M35. The Cement Content for Piling Work shall be minimum 390 kg / m³ with Ordinary Portland Cement.

Grading and other Requirements of Coarse and Fine Aggregates, Water and Concrete shall be as specified for Concrete Works in the Contract Document.

c. Length / Dia of Pile

The Piles are essentially End Bearing and shall be socketed into the Hard Strata at least to a Depth as recommended in IRC: 78 (Latest Edition). The Presence of Hard Strata shall be established by conducting SPT Tests in the Pile Bore. These Tests shall be conducted in every Pile and no Extra shall be paid on this account. On ascertaining the Hard Strata through SPT, further Chiselling shall be done for Socketing. The Number of Drops of a given Chisel Falling at a constant fall for a specific depth of penetration shall be noted and these Chiselling Criteria (in terms of number of drops) shall be used to ascertain Hard Strata in the surrounding bores. The Contractor shall submit the Design Calculation for Pile Load Capacity to the Employer on the basis of the Results of Initial Load Test on Piles. The Test Pile shall be installed as directed by the Employer.

Metal Casings with thickness not less than 5mm shall be used to support the unstable sides from the top of the Borehole to the Soft Rock Level.

Minimum Length of the Embedment: A minimum depth of embedment of 9m (including Socket Length) in Soil shall be maintained where the Pile cannot be driven any further. However, the Termination Level of the Pile shall be as per Specific Instructions of the Employer or his approved Representative. In the event of presence of Rock or very Hard Strata at a shallow depth, the Contractor shall be advised by the Employer regarding the Termination Level and the same shall be in conformity with the Codal Provisions.

Pile Diameters: Piles of minimum 1000mm dia or above shall be used for the Flyovers.

i. **Boring**

Boring Equipment and Accessories shall generally conform to IS: 2911 (Part I / Section – 2). Boring may be done by either Rotary or Percussion Equipment. In case of Unstable Soils, the Boring Tools used shall be such that Suction Efforts are minimised. Stabilization of the Sides of the Boreholes shall be done by the use of Bentonite Slurry or Casing. The Size of the Cutting Tool shall not be less than the Diameter of the Pile by more than 75 mm.

ii. **Drilling Mud**

The Drilling Mud shall be used at least from the Level of Subsoil Water or from the Level of Bottom of Guide Casing depending upon the Site Conditions and the Hole shall then be always kept almost full with the suspension, which shall preferably be kept in motion. The Density and Composition of the Suspension shall be such that to suit the Requirements of the Ground Condition and to maintain the Fine Materials from the Boring in Suspension. A 5% Bentonite Suspension would be generally suitable and its quality shall conform to the Specification given in Appendix A of IS: 2911 (Part I / Section 2).

iii. **Cleaning of Borehole Bottom**

The Bottom of the Hole shall be cleaned very carefully before Concreting Work is taken up. The Cleaning of the Hole shall be ensured by careful operation either by Flushing with the Fresh Drilling Mud through the bottom of the hole or by Air Lifting Process. To lift the Spoil at Founding Level before Concreting, Borehole shall be agitated by jetting with Fresh Drilling Mud with relatively higher pressure than that used during Boring or Air through Tremie Pipe. While boring by use of Drilling Mud, the Specific Gravity of the Mud Suspension in the vicinity of the bottom of Borehole shall be determined at Suitable Interval and Record. Consistency of the Drilling Mud Suspension shall be controlled throughout the Boring and during Concreting Operation, in order to keep the Hole stabilised as well as to avoid Settlement of the Mud.

d. **Founding Level for Piers / Abutments**

The Technical Proposal / GAD shall indicate Founding Level at each Pier / Abutment Location. The Turnkey offer shall include for possibility of Cost of Variation if any between the Actual Founding Level and the Founding Level considered for the Purpose of Bidding. No Extra Payment shall be made in this regard after Finalization of the Turnkey Contract Price.

e. **Ramp / Retaining Walls**

The Solid Ramp Portion of the Flyovers shall be constructed with Reinforced Earth Retaining Structure or RC Retaining Wall designed aesthetically. The Abutments and Returns shall be designed for Live Load Surcharge equivalent to Earth Fill of 1.2m height respectively. The Minimum Density of Filling for Calculations of Surcharge Pressure shall be 2 t / cum. The Surcharge Effect shall be considered for the Purpose of Evaluating Earth Pressure only and not for Vertical Loads.

f. **Pile Foundation**

i. Only Bored Cast – in – Situ Piles shall be accepted.

ii. The Pile Foundations shall be designed as per the Requirements of IS: 2911 (Part I/Section 2) (Latest Edition).

iii. The Contractor shall carry out the Initial Pile Load Test at his own expense. The Design Capacity assumed for the Piles shall be verified by the Initial Load Testing of Test Piles in non working areas, in the vicinity of the Flyovers Site. These Piles shall be tested for 2.5 times the Design Load. Additional Two Piles for each diameter, which are actually going to be used for Piers and Abutments, shall be tested for 1.5 times the Design

Load. Minimum Number of both these Tests to be carried out for each Diameter of Pile shall be two (2) each. The Contractor shall carry out the Pile Load Tests as per the Amendments to Existing Methodology of Pile Load Testing by the Task Force for Quality Assurance in Public Construction dated 22 – 10 – 2011 and IS: 2911 (Part 4).

iv. Annular Piles filled or unfilled shall not be accepted.

v. Design with Single Row of Piles shall not be accepted.

vi. Design shall ensure that no Pile is subjected to Tension.

vii. Concreting shall be done, by Tremie Method after ensuring proper Tip Zone Cleaning by Flushing only.

viii. The Top of Concrete in Pile shall be brought above the cut off level by minimum 750mm to permit removal of all Laitance and Weak Concrete before Pile Cap is laid.

g. Open Foundation

Open Foundation may be provided where the foundations can be lied in a stratum which is in erodible and where the strata is hard at shorter depth.

Excavation should be done in such a way that surrounding soil can stand by itself by suitable sloping the sides. When the excavation has to be deep or when the side slopes are not stable, suitable shoring may be provided from top using timber planks, walling piece and struts.

2.8.8 Substructure

a. Dimensions

- i. Dimension of any Element of Sub Structure shall not be less than 300mm.
- ii. All RCC Piers shall be of Solid Type.
- iii. The Height of Pedestals on Pier Cap supporting Bearings shall not be more than 500mm.

b. Protection to Pier

For the Piers located in the Crossing of Low Level Roads, Protective Island of a minimum height of 1.0m and having a Clear Distance of 250mm from the Face of Pier shall be provided. The Gap between the Pier and the Island Wall shall be filled with Sand. Suitably Designed and Aesthetically Pleasing Fencing made out of Steel Members and painted with Protective Paint shall be fitted on the Top of Wall of the Island.

c. Layout and Design

- i. All Bearings shall preferably be supported directly on Pier Stem. Bearings resting on Overhangs are acceptable provided the Differential Deflection of Pier Cap is accounted for in the Transverse Analysis of Superstructure.
- ii. Dead Man Anchors or Friction Slabs shall not be accepted behind Abutment for relieving Moments.
- iii. Scope for Accessibility for Inspection of Bearings and Arrangement for Lifting of the Superstructure for Future Replacement of Bearings shall be provided for in the Design of Sub Structure and Superstructure. The Positions of Flat Jacks shall be distinctly marked on the Drawing and the Structure.
- iv. Tall Piers shall be checked for Deflection under Horizontal and Eccentric Forces. Pier, Bearings and Expansion Joints shall be suitably designed.

2.8.9 Superstructure

a. Deck Slab

Deck Slab Thickness shall not be less than 230mm.

b. Box Girders

- i. For Pre Stressed Concrete Structure where Cables pass through Webs, minimum Web Thickness shall be

- greater of 150mm + outer dia of Duct or 250mm, whichever is greater. Not proposed in this project.
- ii. The Cross Diaphragms shall be minimum, one number at each Support and at ends of Cantilever, if any. In addition to Abrupt Change in Soffit Geometry, Stiffening Frame or Diaphragm shall be provided to cater to the Forces arising out of Change in Direction.
 - iii. Minimum Thickness of Diaphragms at Supports shall be 500mm and those of other Locations shall be 300mm.
- c. **RCC Box**
The following Method of Analyses and Design of Box Girder are acceptable.
- i. Calculate the Main Girder Moments, Shear Forces and Tensional Moments as for a Single Beam for all Loading Conditions.
 - ii. Also add to above, the Forces due to the Restraint of Warping Torsion at the Ends.
 - iii. In addition, calculate the Bending Moments in the Roadway Slab considering the Slab, the Web and Soffit Slab as a Closed Frame.
 - iv. Reinforcement in the Slabs and Webs due to the Transverse Moments must be provided in addition to the Steel, which is required for Shear or Torsion in the Box as a Main Girder.
 - v. Distortion of Box Girder due to Transverse Moment can be neglected if a minimum number of Diaphragms are provided.
 - vi. In the absence of Rigorous Analysis (A) for the Tensional Moment (B) for Forces due to Restraints of Warping Torsion at ends, the Design Live Load Moments and Shear Force in the Longitudinal Direction shall be increased by 20% and Transverse Reinforcement Steel be increased by 5%.
- d. **Prestressed Concrete Box**
- i. Minimum Un tensioned Reinforcement as per Clause 15 of IRC 18 (Latest Edition). The Spacing of the Bars shall not exceed 200 mm c / c. The minimum Diameter of Bars to be used is 10mm.
 - ii. Method of Analysis and Design of Box Girder shall be the same as detailed for RCC Box Girder.
 - iii. No Tension under Full Permanent Design Load.
- e. **Prestressing Steel**
- i. The Prestressing Cables to be used shall be made using Low Relaxation HT Strands of size 12.7mm / 15.2mm conforming to IS: 14268.
 - ii. All Prestressed Members shall have Spare Cables laid to the Profiles approved by the Employer. The number of Spare Cables shall be at least 5% of the Cables required as per the Design, subject to a minimum of one Cable per Girder / Web. These Cables shall be permitted to be removed fully or partly after the Final Stage of Pre Stressing, if they are not required and Holes grouted.
 - iii. The Maximum Permissible Jacking Force shall not exceed 90% of 0.1 % Proof Stress. 0.1 % Proof Stress shall be taken as 85% of Minimum Ultimate Tensile Strength (UTS).
 - iv. Arrangement for External Pre Stressing shall be got approved from the Employer.
- f. **Prestressed Concrete Girder and Slab**

Concrete Girder and Slab type Superstructure shall satisfy the following Stipulation.

- i. Minimum Thickness of Slab shall be 200mm.
- ii. Minimum Thickness of Web shall be 250mm.
- iii. Where Prestressing Cables pass through Webs, the Thickness shall be same as that stipulated for Webs of Box Girder.
- iv. For Prestressed Girders, the Criteria stipulated in **2.8.9** will be applicable.

g. **Precast Girders**

- i. For Ease and Speed of Construction, it is recommended that Precast Concrete Superstructure may be adopted. While designing such Elements / Structure, Aspects of Durability and Minimum Maintenance shall be kept in view. Criteria of Minimum Dimensions as per **2.8.9** shall be applicable.
- ii. Precast Panel Slab Deck / Girders and Cast – in – Situ Slab Construction shall be designed as Composite Construction.
- iii. Cross Prestressing in Superstructure shall not be allowable in general. However, the Nominal Prestress provided to the extent of keeping various Girders together will be allowable.
- iv. In Pre Cast Construction, the Performance of Joints is especially critical for the Integrity of a Structural System. The Geometric Configuration of a Joint, in addition to the Selection of an Appropriate Interface Material contributes to the proper Short Term and Long Term Performance of the Structure. The Design of Joints shall allow for Movements due to Shrinkage, Thermal Effects and Possible Differential Settlements.
- v. Proper Lifting Arrangements shall be arranged by the Contractor for handling the Pre Cast Unit. The Components shall be designed for Lifting and Erection of Loads and Stresses. Lifting and Handling Positions shall be clearly defined particularly at Critical Locations. Indelible Identity, Location and Orientation Marks shall be put on all Segments as and when necessary.

h. **Precast Segment**

In order to achieve Better Speed of Construction, Pre Cast Segmental type Construction may be adopted for Superstructure. Following Aspects shall be taken into account while Designing and Constructing using the following Techniques.

- i. Requirements regarding Minimum Dimensions, Reinforcements, Prestress, etc. shall be as per **2.8.9**.
- ii. For Construction with Continuous Spans, the Portion over Piers, the Key Segments and End Segments at Expansion Joints may be Cast – in – Situ. All other Segments shall be Pre Cast. For Simply Supported Spans, all the Segments shall preferably be Pre Cast.
- iii. All the Segments shall be match – cast.
- iv. The Shear Keys at the Face of Segments shall be as under.
 - On each Web, Single Key or Multiple Keys shall be provided. These keys shall be designed to transmit Shear Forces.
 - On the Top and Bottom Slabs, Keys shall be provided to maintain Alignment and Level.
- v. Formwork shall be Robust and the Foundations of the Casting and Stacking Yard shall be designed to safely support all Applied Loads without Undesired Deformations or Settlements.
- vi. In order to achieve Smooth Profile of Pre Stressing Cables and to prevent Entry of Cement Slurry at the Joints of Matching Segments, PVC Pipe shall be inserted through the Cable Duct of both the Segments (i.e. Matching Segment and Segment being cast) at the time of concreting.
- vii. The Work shall be executed by specially Experienced Team of Pre Stressing Professionals.

- viii. Bond Breaking Agents shall be used while casting the Segments so that the Segments can be easily separated after casting. Scheme for Pre Casting of Segments shall be approved by the Employer.
- ix. The Joints between Adjacent Segments shall be treated with appropriate Epoxy Formulation to facilitate Erection and to fill Cavities, if any. While applying Epoxy, care shall be taken to see that the Epoxy does not block the Openings of the Cable Ducts. Epoxy shall be applied on the Interface of both the Segments and the Joint subject to a minimum Pressure of 2.0 Kg / Sqcm for a period of 24 hours till the Epoxy sets. This may be achieved by Temporary Pre Stress or any other Means. Permanent Cables shall then be introduced in the Ducts and after Pre Stressing the required No. of Cables in the Specified Sequence, the Temporary Pre Stress may be released.
- x. The Method of Erection of Segments shall be such that the Desired Geometric Profile of the Loop Deck is obtained.
- xi. The Segments shall be checked for Stresses during Handling and Erection and Necessary Calculations shall be submitted for the Employer's Approval.
- xii. External Pre Stressing Cable System is allowable for Segmental Pre Cast Superstructure.
- xiii. Calculations for Segment Casting Dimensions shall be submitted for the Employer's Approval taking into account the Effect of Creep and Shrinkage.
- xiv. Reference may be made to the Document "Guides to Good Practice Recommendations for Segmental Construction in Prestressed Concrete" published by FIP and 'State of the Art Report on Materials and Systems for External Prestressing'.

NOTE: The Tenderer may submit his Alternative with Composite Structure. The Composite Section shall be limited to Superstructure only with Girders in Steel and RCC Deck Slab.

2.8.10 Bearings below Superstructure

Bearings under Superstructure shall be within the External Line of the Pier / Abutment. The Bearings shall be provided below the Diaphragm at Suitable Locations.

- a. The Types of Bearings generally allowable are as follows.

<u>Span</u>	<u>Type of bearing</u>
For Effective Spans up to 18m	Elastomeric Bearings
For Effective Spans more than 18m	Spherical/POT cum PTFE / POT

- b. The Bearings shall be easily accessible for Inspection / Maintenance.
- c. Scope for Lifting the Superstructure for future replacement of Bearings shall be provided in the Design of Bearing. The Scheme of Lifting shall be indicated in the Drawing to be submitted along with the Technical Bid.
- d. Inspection of Bearings by the Director General of Supplies and Disposal (DGSD) during manufacture is essential. The Contractor shall have to produce Necessary Certificate and Inspection Marks from the DGSD at his own Cost.
- e. The Bearings shall conform to the Requirements of the MoRT&H Specifications.
- f. The Dimensions of the Top Plate of the Bearing shall be such that the Contact Surface of the Superstructure projects beyond the Edge of Bearing Plate by a minimum distance of 50mm at any Location.

2.8.11 Expansion Joint

Elastomeric Strip Seal Type Expansion Joint conforming to Clause 2607 of MoRT&H Specifications shall only be allowable. Calculations for the Adequacy of the Expansion Extent for which the Joint is selected by the Tenderer

shall be submitted in the Technical Bid along with Name of Manufacturer and their Technical Details. During Installation of these Joints, Manufacturer's Engineer shall be required to supervise the same including Thermal Pre Setting, if required.

2.8.12 Crash Barrier

Concrete Crash Barrier shall conform to Clause 809 of MoRT&H Specifications. The Tenderer may propose Alternate Type of Crash Barrier in the Technical Bid. It will be necessary to provide a 50mm dia MS Tube Hand Rail 300mm above the Crash Barrier and supported at Suitable Intervals. No Welding shall be done for Connections. Crash Barriers shall be provided with Employer's Emblem as per the Approval of the Employer.

2.8.13 Drainage

Drainage of Storm Water collected on the Rotary Flyovers/ROB is essentially based on

IRC: SP: 42 "Guidelines on Road Drainage"

IRC: SP: 50 "Guidelines on Urban Drainage"

The Drainage Spouts shall conform to Clause 2705 of MoRT&H Specifications. The Tenderer shall indicate the Drainage Spouts and its Disposal to natural Storm Water Drain in the Drawings submitted with the Technical Bid.

The Drainage Spouts shall be connected to a Cast Iron Runner Pipe of diameter not less than 150mm and taken down by Down Take Pipes of suitable diameter through the Pier or at Approved Locations. These Pipes shall be connected to Longitudinal Drains below Surface and the Water finally being disposed off into natural Storm Water Drain using appropriately designed RCC Box Culverts for Crossings.

At Ground Level, Catch Water Drain with GI Gratings at Top shall be provided at each end of the Flyovers. Drainage of Water collected at the Deck Level shall be effectively conveyed to Tertiary Drains at Ground Level through Appropriate Box Culverts across Surface Level Roads. The Drains shall be connected to the nearest natural Storm Water Drain. The Turnkey Cost shall include for all these Items.

The entire System including all Arrangements / Details shall be included in the Cost.

2.8.14 Wearing Coat

A Bituminous Wearing Coat of Uniform Thickness shall be provided for Smooth Riding Surface and shall conform to Clause 2702.1 of MoRT&H Standard Specifications for Road and Bridge Works (Latest Edition). The Cross Sections indicated in the Drawing no **NEZPL/DWG/PRJ/204-1 TO 6** for Rotary and ROB at LC 136A shall be strictly adhered to.

2.8.15 Approach Slab

The Approach Slab shall conform to Clause 2704 of MoRT&H Standard Specifications for Road and Bridge Works (Latest Edition).

2.8.16 Electrical Works

The Tenderer shall include the Cost of Lighting above and below the Flyovers in his Turnkey Tender and shall carry out all the Electrical Works as per relevant Codal Provision. The Tenderer shall indicate the proposed Lighting Arrangements as per relevant IS Codes and the existing Street Lights in the Drawings submitted with the Technical Bid. The Lamination shall be average of 40 lux throughout above and below the Flyovers.

2.8.17 Integrity Test

Low Strain Integrity Test shall be carried out for all the Piles in conformation to ASTM D 5882 from an Empanelled Consultant in the Ministry of Shipping, Road, Transport & Highways. The Tenderer shall include the Cost of Conducting this Test in his Turnkey Tender.

2.8.18 Painting

Painting with Approved Colour, Shade, Make and Type shall be provided for various Elements as follows.

i.	Steel Box Girder / Steel I girder	With two coats of epoxy paint conforming to RDSO spec M&C/PCN/123-11
ii.	Viaducts and RE Panels / Retaining Wall	Anti Carbonate Painting as per Specifications.
iii.	Kerbs for Medians, Footpath, etc. and Guard Railings, Grills and other MS Items, wherever required.	Two Coats of approved Enamel Paint over Two Coats of Zinc Phosphate Grey Primer.
iv.	MS Hand Rails over Crash Barrier	Two Coats of Epoxy Paint over a Compatible Primer after Cleaning the Surface with Sand Blasting.

2.9 Load Test

- a. Before commencement of work contractor at his own risk shall perform the vertical and horizontal test as initial load test on test pile and on routine piles for elevated rotary and ROB as per relevant IRC code. Apart from the above test in case a Structure or a Component of Structures proposed by the Contractor in the opinion of the Employer is of Unusual Nature, then the Employer shall have the Right to call upon the Contractor to carry out Model Testing and / or Load Testing of the Structure or Component to prove its Suitability. The Cost of such Test shall be borne equally by the Contractor and the Employer if the Test Results are Satisfactory. In case the Test Results are not satisfactory, the Cost of Testing shall be entirely borne by the Contractor.
- b. If required by the Employer, the Contractor shall have to carry out a Load Test on anyone Unit of the Bridge Structure for the Design Static Loads or their equivalent and in a manner as may be decided by the Employer.
- c. The Employer may also instruct that a Load Test shall be made on any part of the Bridge Structure if in his opinion such a Test be deemed necessary for anyone or more of the Reasons specified below.
 - i. The Work Test Cubes failing to attain the Specified Strength.
 - ii. Shuttering being prematurely removed.
 - iii. Concrete being improperly cured.
 - iv. Any other Circumstance(s) attributable to the Negligence on the part of the Contractor which in the Opinion of the Employer results in the Structure or part thereof being of less than the expected Strength.
 - v. Any Reasons in case of Doubtful Quality or Soundness of Structure.
- d. If the Load Test is to be made
 - i. For anyone or more Reasons mentioned in (b) above, the Cost of the same shall be Reimbursable to the Contractor at the rate tendered by him, provided the Test Results thereof are found to be Satisfactory.
 - ii. Wholly or partly for the Reasons given in (c) above, the Test shall be carried out by the Contractor, at no extra Cost to the Employer.
- e. In the Event of Load Testing being ordered by the Employer, the Contractor shall
 - i. Prepare well in time all Necessary Calculations and Details of Arrangements for such Load Testing, e.g. the Magnitude of the Test Load, Mode and Method of Carrying out the Test, the Application of Loads, Duration of Keeping the Load, the Equipments to be provided and Observations to be made during and after Placing the Loads in Position, etc.
 - ii. Make all Necessary Arrangements for Observations, Centering, Equipments, etc. that may be needed for Measuring the Settlement, Deflections, etc. required for the Test, to the entire Satisfaction of the Employer and
 - iii. Provide Labour and make all Observations during the Test.
- f. After the Test, the Contractor shall submit a Report on the Results of the Tests. The Employer shall then communicate as to whether the Test has been satisfactory or not. Any Further Tests or Reconstruction or Strengthening as may be necessary shall be decided.

- g. Any Defect noticed in the Structure or any Damage done to the Bridge, at the Time of Testing, which affects or is likely to affect the Strength of the Bridge, shall be rectified by the Contractor at his own Cost by Remedial Measures or Replacement as approved by the Employer.
- h. When the Tests are declared by the Employer as having been completed, the Contractor shall remove all Loading, which might still be on the Bridge as well as on the surroundings.
- i. Only Design Load is to be superimposed for Prestressed Concrete Superstructure. IRC: SP: 37 shall be followed for Load Testing. Necessary Correction for Variation in Deflection due to Temperature Variation throughout the day shall be applied.

2.10 Slip Roads, other Surface Level Roads, Culverts and Junction Improvements

The Work of **Approach Road i.e. Solid Ramp Portion** to be carried out under this Contract. The Total Scope of Road work is 2100 m considering both side.as per followings:

- a. Construction of **Approach Road i.e Solid Ramp Portion** including Dismantling of Existing Structures coming on the Carriageway such as Govt. Buildings, Compound, Drains, Footpaths, Kerbs, Medians, Parapet Walls; Construction/widening of Culverts/Box culverts; etc
 - Slip Roads beyond the Lengths of the approaches to Elevated Rotary Ramps are to be merged with Existing Roads through a Taper / Transition of 1 in 15.
- b. Construction of Medians; Kerbs, Footpath, Storm Water Drains with Drain Cover Slabs where ever missed and necessary, Traffic Signages, Overhead Gantry, Road Marking such as Lane Marking, Pedestrian Marking, Direction Marking, STOP and STOP Lines, etc. as per the Specifications given MoRT&H and Kerb Painting as per the Specifications mentioned in this Tender Document.
- c. The Construction of Medians, Kerbs and Footpath shall conform to Clause 407, 408 and 409 of the MoRT&H Specifications for Road and Bridge Works (Latest Edition).
- d. Dismantling of Existing Road Over Bridge at IOC Junction with down ramp loop, etc. and reconstruction with Elevated Rotary with approaches as per the structural design mentioned above section 2.8.

2.11 Submission of Elevated Rotary/ROB design Reports for Railway approval

After award of work, Successful Tenderer shall submit the following design reports for railway Approval

- 1. Design basis report of the bridge stating the salient features of bridge, i.e span, skew angle span arrangements, longitudinal eccentrics, depth of girders, type of superstructure STEEL, R.C.C., PSC, composite, type of bearings arrangement with sketch showing fixed/free ends, curvature if any and the details of parameters codes, load combinations cases, wind, seismic zone etc. For drawings of non-standard span of Railways must duly proof checked by IIT/IISc, NIT/approved consultants for this purpose before submitting the detail design.
- 2. Soil report of the railway bridge site with bore hole at each railway pier and abutment location and also shown on sketch showing the bore holes locations w.r.t to pier/abutment positions. The recommendations of the soil consultant for the open foundation/pile foundation if applicable clearly stating the pile length with safe loads for two three alternates.
- 3. The feasibility of the structure or components must be checked in all respects by the tenderer before submitting the design to Railway/BBMP office and signed by the authorized signatories of Tenderer.
- 4. The drawing must be submitted in preferably A-I size only in prescribed/standard format.

5. The design/drawing of the test pile is to be submitted if applicable for the approval as per the codal provisions duly proof checked by IITs INIT/approved consultants.
6. The software/staad files hard copy as well as soft copy must be submitted with the design note used in design for help in checking the design.
7. PSC Superstructure has to be as per IRC-112, Composite Superstructure has to as per IRC-24
8. Stress summary should be prepared for each component of the bridge i.e. pile or open foundation as applicable, pile cap/foundation slab and beam, pier, pie cap, stating the actual stresses vs permissible stresses or steel provided vs steel required.
9. A certificate from the proof checking agency on successful Tenderer letter head stating that the design and drawing of the bridge has been checked by me and found in order as per the latest IRC codal provisions.

2.12 Safety precautions and measures to be observed during execution of Elevated Rotary/ROB works in Railway and Adjoining areas

The works required to be done under traffic block protection, are to be carried out only in the presence of Railway Engineering officials. The Railways supervisor has to certify safe conditions for passage of trains before resumption of traffic. Following important activities of works shall be carried out under supervision of Railways nominated Supervisor

- a) Excavation at foundation/Ground level near to Railway track.
- b) Concrete casting and/or masonry very close to Railway track.
- c) Erection of temporary structures near to running lines.
- d) Casting of structures like girder/slab over Railway track.
- e) Stage-Pre-stressing of girders when placed across Railway tracks properly supported.
- f) Launching of precast/pre-assembled girders across Railway tracks.
- g) Any work of lifting, side shifting and slewing of girders over the Railway track.
- h) Dismantling of temporary structures, shutters, scaffolding etc. adjacent to and above the Railway track.
- i) For carrying out activities of casting, erection, launching, handling and dismantling as listed above, the Contractor's Engineering shall furnish the Construction Programme in advance to Railway Supervisor Engineer. No such work should be taken up in absence of the Supervising Railway Engineer. For the activities which are to be done in presence of the Railway Engineer, prior intimation shall be given in writing and acknowledgement obtained from Railway's representative. Such activities of work shall not be carried without the presence of Railway Engineer.

2.13 Maintenance of Surface Level Road Traffic worthy and Providing New Drainage System at damaged location

The Tenderer shall include the Cost of Maintaining the Existing Road Traffic worthy i.e. repairs of wear and tears Site handed over to him. The Tenderer shall include in his Cost the Cost of Safety of Roads and Junction Treatment for smooth flow of Diverted Traffic during Construction. Further, it may be noted that the Resurfacing of Road shall be carried out periodically as per the Instruction of the Employer during Construction Period and also finally before handing over the Work. The Turn Key Amount quoted is deemed to include Repetitive Asphaltting.

2.14 Traffic Signs, Markings and other Road Appurtenances

Traffic Signs, Markings and other Road Appurtenances shall conform to Clause 800 of the MoRT&H Specifications for Road and Bridges (Latest Edition) and shall be shown in the Drawings submitted with the Technical Bid. Road Markings shall conform to IRC: 35 (Latest Revision) and Road Signs shall conform to IRC: 67 (Latest Revision). The Tenderer shall submit the Detailed Drawings of the Signages required as per the relevant IRC Specifications. Overhead Gantry by indicating Destinations as per the Approval of the Employer shall be provided at the Approved Location. Signages shall be provided with Retro Reflective, Micro Prismatic Reflectionised Stickers. Advanced Direction Boards with similar Specifications as above shall be provided at Locations mandated by IRC and as

directed by the Employer.

2.15 Drainage System

The Contractor shall carry out Hydraulic Study in the entire Catchment Area, which is having influence on the Battery Limit of the Project, in order to assess the Quantity of Runoff to be drained off from the Battery Limit. For this purpose, the Contractor shall map the Storm Water Drainage System, which passes through the Battery Limit. He shall calculate total Quantity of Runoff, which precipitates on the Battery Limit Area and enters the Battery Limit Area. The Contractor shall work out a Comprehensive Drainage System for Disposal of Runoff collected in the Elevated Rotary/ROB, on Surface Level Road by Gravity Flow only and the Drain shall be connected to the nearest Natural Storm Water Drain and as per the Approval of the Employer.

All Drainage System shall conform to Clause 309 of MoRT&H Specifications for Road and Bridges (Latest Edition).

However, the Levels and Dimension Details for Drainage Arrangement shown in the Drawings are only indicative. The Contractor shall carry out the required Hydraulic Study and work out the Levels and Dimension Details for Drainage Arrangement based on the Hydraulic Study.

The Tenderer shall indicate a Comprehensive Drainage Arrangement System in the Drawings to be submitted at the time of execution.

The Lump Sum Cost quoted by the Tenderer shall include rectification and restoration to the proper drainage work. During the Construction, the Water, which is met with, shall be pumped into the Roadside Drains. At no point it shall be pumped into BWSSB Sewer / Sanitary Lines.

2.16.1 Carriageway Improvement Works

The Works to be carried out under this Turnkey, Contract shall include

- j. Improvements to Carriageway for the Stretch mentioned above and shall be as per the Instructions of the Employer / his representatives. It is inclusive of dismantling of existing Black Topped Surface, and Disposing of Disused Materials and where ever the roads within the project limit is completely damaged is to be re constructed with the pavement crust with subgrade , GSB,WMM and Bituminous layers as per MORT&H Specifications as specified above . Scope of work limited to pavement composition with respect to Length, width, thickness, with total area of 7913 sqmt are shown in the Table at section 2.17.10
- ii. Providing and applying Tack Coat on the Prepared Black Topped Surfaces at 2.5 kg per 10 Sqm as per MoRT&H Specifications.
- iii. Providing and fixing Pre Cast Solid Concrete Kerb Stones of Size 600mm X 300mm X 150mm made out of CC M15 and finished with CM 1:3 Plastering and Finishing, Cutting, etc.
- v. **Road Marking with Hot Applied Thermo Plastic Compound with Reflectorising Glass Beads on Bituminous Surface along Edge Line near Footpath and Median, Centre Broken Line and Zebra Crossing near Junctions as per the Instructions of the Employer / his Representatives:** Providing and laying of Hot Applied Thermoplastic Compound 2.5mm thick including Reflectorising Glass Beads at 250gms per Sqm area, whereas Thickness of 2.5mm is exclusive of Surface Applied Glass Beads as per IRC: 35 (Latest Edition). The Finished Surface shall be level, uniform and free from Streaks and Holes and shall be completed as per MoRT&H Specifications. The minimum kerb length should be 3778m and area of asphaltting with 80mm DBM& 40mm BC should not be less than 15338sqmt
- vi. Providing and fixing of Road Stud of Size 100 X 100mm, die cast in Aluminium, Resistant to Corrosive Effect of Salt and Grit, fitted with Lens Reflectors, installed in Concrete or Asphaltic surface by Drilling Hole 30mm upto a Depth of 60mm and bedded in a suitable Bituminous Grout or Epoxy Mortar, all as per Specifications of BS: 873, Part 4 along Edge Line near Footpath and Median, Centre Broken Line and Zebra Crossing near Junctions as per the Instructions of the Employer / his Representatives.

The contractor shall carry out the carriageway maintenance works at grade

The Contractor shall carry out the Carriageway Improvement works at required locations at grade within the Battery limit.

2.16.2 Paved Pedestrian Crossing

The Works of providing Paved Pedestrian Crossing of 3m wide to be carried out under this Turnkey Contract shall include

- i. Scarifying Top Bituminous Surface or Surface Dressing or Premix Carpet including Picking up Scarified Materials, Stacking of old Serviceable Materials and complete as per MoRT&H Specifications.
- ii. Providing and applying Tack Coat on the Prepared Black Topped Surfaces at 2.5 kg per 10 Sqm as per MoRT&H Specifications.
- iii. Providing and laying Bituminous Concrete of 30 – 45mm compacted thickness with 40 – 60 TPH Batch Type Hot Mix Plant using Crushed Aggregates of Grading II, pre mixed with Bituminous Binder at 5.4 to 5.6% by weight of total Mix and Filler using Bitumen 60/70, laying with a Hydrostatic Paver Finisher with Sensor Control to the required Grade Level and Alignment, rolling with Smooth Wheeled, Vibratory and Tandem Rollers to achieve the desired compaction as per MoRT&H Specifications.
- iv. Providing and laying Heavy Duty Cobble Stones 75mm thick Interlock Pavers, using Cement and Course Sand for Manufacture of Blocks of Approved Size, Shape and Colour with a minimum Compressive Strength of 281 kg per Sqm over 50mm thick Sand Bed and compacting with Plate Vibrator having 3 Tons Compaction Force thereby forcing Part of Sand underneath to come up in between joints, final compaction of Paver Surface Joints into its final level and complete as per the Instructions of the Employer / his Representatives.
- v. Providing and fixing Precast RCC Slab of 100mm thick for Side Wall in Cement Concrete 1:1.5:3 using Graded Granite Jelly 20mm and Downsize with Steel Reinforcement, including Form Work, Curing and Concrete Finished Surfaces on both sides, etc. and complete as per the Instructions of Employer / his Representatives.

2.16.3 Pipe Duct

The Works to be carried out under this Turnkey Contract shall include

- i. This Work includes required Excavation, providing RCC pipe duct across the road at Kammanahalli, Maruthi sevanagara side, Railway station road for a total length of 48 m
- ii. Excavation, providing and laying of Plain Cement Concrete of minimum 100mm thick, Providing and laying of Class NP3 Hume Pipe of 300mm diameter at 2.5% Slope
- iii. Packing the sides and above the Hume Pipe with Controlled Earth as per the Instructions of the Employer / his Representatives.

The Contractor shall provide Shoulder Drain on either side of the Carriageway at an interval of not less than 15m c/c at the location of waterlogging area where drainage is not proper. Further, the Contractor shall carry out the required Hydraulic Study and work out the Levels and Dimension Details for Drainage Arrangement based on the Hydraulic Study and get the Drawing approved by the Employer before Execution.

2.16.4 Road Side Existing Drain

The main objective of this Work is to facilitate Free Water Flow in the Road Side Existing Drain collected from ROW and from adjoining Properties. The Works to be carried out under this Turnkey Contract shall involve two types of Works along the length of existing drain within the project area irrespective to the scope of work mentioned in the clause 2.17.10

- Removal and resetting of Drain slab.
- Desilting of existing drain for smooth flow.

2.16.4.1 Construction of new RCC Drain covered with new RC Precast Slab

This involves Construction of RCC Drain of 750mm length with Dimension 1m Width X 1.0m Depth along the road

at missed locations with RC Precast Slab of minimum 100mm thick.

The above Work involves the following Items.

- ❖ Earthwork Excavation for Drain, levelling of Excavated Surface with the sides neatly dressed.
- ❖ Disposal of the Disused Materials.
- ❖ Providing and laying minimum 100mm thick PCC M15 with OPC Cement @ 240 kg / cum, 40mm Downsize Graded Granite Metal Coarse Aggregate @ 0.84 cum / cum and Fine Aggregates @ 0.56 cum / cum in Open Foundation and complete as per MoRT&H Specifications.
- ❖ Providing Open Box Type RC Wall of minimum thickness 200mm with Design Mix M20 with minimum OPC Cement @ 320 kg / cum, with 20mm Downsize Graded Granite Metal Coarse Aggregates @ 0.69 cum / cum and Fine Aggregates @ 0.46 cum / cum with Superplasticiser @ 3 litres for each cum of Concrete conforming to IS: 9103 including all necessary Dewatering, Centering, Shuttering, etc. as per the Approved Design.
- ❖ Backfilling and Compaction behind the Side Walls with Approved Earth.
- ❖ Providing and fixing of Precast Perforated RC Slab of minimum 100mm thick for Cement Concrete 1:1.5:3 using Graded Granite Jelly 20mm and Downsize with Steel Reinforcement, including Formwork, Lifting, Curing and Concrete Finished Surfaces on both sides, etc. and complete as per the Instructions of the Employer / his Representatives.

Further, the Contractor shall carry out the required Hydraulic Study and work out the Levels and Dimension Details for Drainage Arrangement based on the Hydraulic Study and get the Drawing approved by the Employer before Execution. The Hydraulic study includes planning and construction of Rain water collection system and harvest of the same at Rotary and RoB locations.

2.17.4 Kerb

The Works of providing and fixing Kerb Stones at required/missing/damaged locations to be carried out under this Turnkey Contract shall include

- ❖ Providing and fixing Precast Solid Concrete Kerb Stones of Size 600 X 300 X 150mm made out of CC 1:2:4 and finished with CM 1:3 Plastering and finishing, cutting, etc. in the Median and at the edge of Footpath at required locations within the overall project limit of 3778m length.
- ❖ **Painting of Kerb Stones:** Painting two coats after filling the Surface with Synthetic Enamel Paint in approved shades on new Plastered Concrete Surfaces as per MoRT&H Specifications for the entire Stretch of Corridor.

2.17.5 Footpath

The Works of providing Footpath with minimum area of 5589 sqmt including at damaged locations to be carried out under this Turnkey shall include

- ❖ Providing and fixing Interlocking Cobble Stone Paver
This Work shall include the following Items.
 - Required Earthwork Excavation.
 - Disposal of Disused Materials.
 - Surface Levelling.
 - Providing and laying Cast – in – Situ RCC Slab of 200mm thick for Side Wall with Design Mix M20 with minimum OPC Cement @ 320 kg / cum, with 20mm Downsize Graded Granite Metal Coarse Aggregates @ 0.69 cum / cum and Fine Aggregates @ 0.46 cum / cum with Superplasticiser @ 3 litres for each cum of Concrete conforming to IS: 9103 including all necessary Dewatering, Centering, Shuttering, etc. and complete as per the Instructions of Employer / his Representatives.
 - Providing and laying minimum 50mm thick Sand Bed.
 - Providing and laying Heavy Duty Cobble Stones 60mm thick Interlock Pavers, using Cement and Coarse Sand for Manufacture of Blocks of Approved Size, Shape and Colour with a minimum Compressive Strength of 281 kg per Sqm over 50mm thick Sand Bed and compacting with Plate Vibrator having 3 Tons Compaction Force thereby forcing Part of Sand underneath to come up in between joints, final compaction of Paver Surface Joints into its final level and complete as per the Instructions of the Employer / his Representatives.

2.17.6 Illumination

The Illumination Works to be carried out under this Turnkey Contract shall include Replacement, Fixing and Laying of Damaged Box Tunnels, LT Cables, Earthing Requirements, Poles, Fixtures and Painting of Poles and complete as per the Instructions of the Employer / his Representatives.

2.17.7 Traffic Signage and Marking

This Work to be carried out under this Turnkey Contract shall include providing and fixing of Retro Reflectorised Cautionary, Mandatory, Informatory Sign as per IRC: 67 (Latest Edition) made of high intensity grade sheeting, fixed over Aluminium sheeting, 1.5mm thick supported on a Mild Steel Angle Iron Post 75mm X 75mm x 6mm firmly fixed to the ground by means of Approved Designed Foundation with M15 Grade Cement Concrete 45cm X 45cm X 60cm, 60cm below Ground Level as per the Approved Drawing and complete as per MoRT&H Specifications.

2.17.8 Board Display Information

The project displaying information, such as 'Name of work, Tender cost, Name of Contractor, Work completion and liability period etc', having rectangular shape of 1.20m x 0.90m size to be display under this contract at the locations as decided by the Employer/his Representatives and cost of the display information board is deemed to be included in the quoted rate.

2.17.9 Project Cost estimate

The estimate for the project has been arrived based on the concept and alignment plan considering the quantities of all the items as mentioned in the scope of works. The tenderer shall study the concept drawings and scope of the work thoroughly in detail before submission of tender. The successful tenderer shall be responsible to complete the above entire scope of work including preparation of detailed design working drawings and obtaining GAD approval from Railways/ BBMP within the quoted contract amount under no variation. Elevated Rotary is designed with of Steel Box Girder with top open Trapezoidal section per span for a circumferential length of 255m with 4 different spans, of which super structure of 1 x 81.31m, 1 x 68.5m, 1 x 56.0m, & 1 span of 48.0m, and a longest span of 81.31m with varying depth of Girder from 1.5m to 2.5m, and each span with 3 nos of steel box girders. The additional support if any other than the tender drawings for the above railway spans for elevated rotary are provided as approved by Railways are claimable as per Special Conditions of Contract clause No 66 of this contract. The type of deck slab proposed for ROB at LC No 136A is with I- Girder with composite slab. The approaches to elevated rotary and for ROB at LC No 166A are proposed with PSC I-Girders.

The minimum scope of work as described in the above sections is summarized in the table below.

Summary of the Scope of work							
SI No	Description	Unit	Length m	Width m	Depth m	Area sqmt	Ref Tender Clause
1	Elevated Rotary and PUP Structural length and width details						2.8.1
2	ROB at LC 136A Structural length and width details						2.8.2
3	New RCC Drain	mt	750				2.17.4
4	CROSS DUCT Single row	mt	48				2.17.2
5	Footpath	mt	3726	1.5		5589	2.17.6
6	Kerb	mt	3778				2.17.5
7	GSB	mt	1055	7.5	0.2	7913	2.17.1
8	WMM	mt	1055	7.5	0.25	7913	2.17.1
9	DBM	mt	1055	7.5	0.05	7913	2.17.1
10	BC	mt	1055	7.5	0.04	7913	2.17.1
11	<0.9SQMT DIRECTION BOARD		15	0.9		13.5	2.17.8
12	>0.9SQMT DIRECTION BOARD		15	1.5		22.5	2.17.8
13	Gantry	No (4 locations)	6				
14	Compound wall Defense	Mt	300				1.3(x)
15	Compound wall Railway	Mt	300				1.3(x)
16	STREET LIGHT POLE	No	484				2.17.7
17	Led lights	No	484				
18	single braket	No	351				
19	Double braket	No	448				
20	1.1kv LT cable	Km	3.17				
21	Railway waste water primary treatment plant	Kld	100				1.3(y)
22	Railway Electrical room	Sqmt	144				1.3(y)
23	New gowdan construction for Railways department	Sqmt	210				1.3(y)

3.0 Documentation, Instrumentation, etc.

- All Drawings shall be made in Latest Version of AutoCAD and the Soft Copies on CDs and ten Hard Copies of Prints of all Approved Drawings and "As Built" Drawings shall be supplied by the Contractor to the Employer at Free of Cost as per the Agreed Programme.
- CDs and ten Hard Copies of all Approved Design Calculations shall be submitted by the Contractor to the Employer at Free of Cost as per Agreed Programme.
- Five Video CDs of 180 minutes duration each of the Elements covering the Different Phases of Construction from Start to Finish shall be supplied by the Contractor to the Employer at Free of Cost.
- Three Copies of "Maintenance Manual" describing Access Arrangements, Important Obligatory Precautions from the Point of View of Structural Safety and Procedure for Minor and Major Repairs of each Component of the Elements, Renewals of Finishes and Treatments periodically including Guarantee / Warranty Certificates shall be supplied by the Contractor to the Employer at Free of Cost.
- Three Copies of "Quality Assurance Manual" covering Designs and Drawings, Mix Designs, Materials, Testing, Soil and Rock Properties, Statistical Quality Control, etc. shall be prepared by the Contractor and submitted to the Employer at Free of Cost well before Starting the Work.
- Three Copies of "Safety Manual" covering necessary Safety and Precautions to be adopted by the Contractor as per Requirements and as per Standards during execution of the Work.
- Three Copies of "Construction Manual" covering Various Aspects of Construction Methods, Difficulties faced and how they are overcome during Execution, etc. shall be supplied by the Contractor to the Employer at Free

of Cost at the Time of Finalisation of Work.

- h. The Contractor shall install Fixtures and Fastenings provided by the Employer for housing any Instrumentation that may be useful for the Employer at Contractor's Cost.
- i. Fixing Arrangement for Internal and External Lighting shall be approved by the Employer and executed by the Contractor.

4.0 Programme of Submission and Approval of Designs and Drawings

The Programme for submission of Designs and Drawings is as listed out below.

Details	Time from Award of Work
Award of Work	0
Submission of Topographic Survey Drawing along with the Soil Investigation Report, Hydraulic Study Report, Details of Utility Mapping	4 Weeks
Horizontal and Vertical Geometrics, GAD and Construction Methodology and Schedule	5 Weeks
Traffic Diversion Schemes / Traffic Management Schemes during Construction, Quality Assurance Manual, Safety Manual, Physical Model of the Project	5 Weeks
Inception Report and Detailed Design Parameters	7 Weeks
Design and Construction Drawings of all Foundations and Preliminary Design of Entire Elevated Rotary and its approaches Structure	10 Weeks
Design and Construction Drawing of Road Over Bridge , Abutments and Reinforced earth/Retaining Walls in Approaches, all Piers and Abutments of ROB	15 Weeks
Design and Construction Drawing of all Superstructures	17 Weeks
Design and Construction Drawing of Balance Items of Work	20 Weeks
Submission of As Built Drawings, Video CD, Maintenance Manual, Construction Manual	4 Weeks after Completion of Work

The Total Period available for Submission of all Detailed Design and Drawings from the Date of Award of Work is 20 Weeks, which will be submitted in accordance with the Approved Construction Schedule.

The Design shall be submitted in Sufficient Details and as lucidly as possible so that to enable Quick Proof Checking by the Employer or his approved Representative. All the Design Calculations along with Corresponding Construction Drawings marked as "Good for Construction" will be submitted. The Corrected Designs are to be submitted as Record Designs within 15 Days of Approval of the Drawings. If the Record Designs are not submitted within this Time Frame then a Penalty at the rate of **Rs. 100000/-** per day shall be charged for every day of Delay in Submission of the Record Designs. The Corrected Designs and Drawings would be cleared within 3 weeks of submission subject to Compliance of all Points. Any other Component, which requires Redesigning on Account of Exigencies of the Site like Redesigning the Foundations for Utilities, etc. during the Duration of the Works, shall be approved as expeditiously as possible. Such Designs shall be submitted within 10 days of taking a Decision to redesign the Component. Analysis and Design shall be done using Computer with Recognised Software. The Contractor shall submit with Design, the Detailed Description of Method of Analysis with Explanatory Notes and submit Sample Manual Calculations for adequate number of Typical Cases. The Computer Programme as submitted will be further tested by Comparison with Solutions of Worked Examples. Drawings and Designs shall be in SI Units. Calculations shall be neat and clear, preferably typed and printed and supplemented by Full Explanatory Notes and Sketches wherever required. All Construction Drawings of Initial Submissions and Final Approval shall be in AutoCAD only.

If during the scrutiny of Detailed Design Calculations and Working Drawings, any Changes therein which are found necessary in the Opinion of the Employer, the same shall be incorporated without altering the Turnkey Quotations. It is entirely the Responsibility of the Contractor to submit properly Prepared and Completed Designs in good time to enable the Employer to approve them in time.

The Contractor shall submit 2 sets of Advance Copies of the Drawings and Design Calculations to the Employer or his approved Representative with a Forwarding Letter to the Employer. Once the Design and Drawings have been finalised by the Employer, the Contractor shall forward eight sets of Drawings incorporating Corrections, if any, for the Final Approval.

After Completion of each Stage of Work, 3 Sets of Record Plans and One Set of Final Design Calculations based on the Work as actually executed on Site, shall be supplied by the Contractor in Bound Volumes to the Employer.

Approval to Drawings, Designs and Design Calculations by the Employer shall not in any way relieve the Contractor of his Responsibility for the Correctness, Soundness and Structural Stability and Safety of the Structure.

The Approved Drawings and the Design Calculations of the Elements shall be the property of the Employer.

The Contractor's Designer or Consultant shall compulsorily attend all the Review Meetings conducted by the Employer from time to time without any extra cost and shall also remain present as and when required during the Checking of Designs for Clarifications, if required.

As Built Drawings shall be submitted within 4 weeks from the Date of Completion of Works. Penalty of **Rs. 1000000/-** shall be levied for every week delay in submission of as Built Drawings beyond the Stipulated Deadline. An amount of **Rs. 10000000/-** shall be withheld from the Contractor's Final Bill until the As Built Drawings are submitted.

5.0 Construction Schedule

The Construction Schedule and the Methodology of Construction shall be so planned that there is Minimum Obstruction to Traffic during Construction and the entire Work can be completed in minimum possible time.

6.0 Site Office

The Contractor shall provide and maintain Furnished Site Office at the Project Location for the Supervisory Staff of the Employer and his approved Representative. It shall have minimum 40 Sqm of Floor Area and shall include all Items like Electric Supply, Electrical Items, Telephones, Lights, Fans and Complete Wiring, Drinking Water Supply and Hygienic Toilet Facilities completed along with Furniture as listed below.

- | | |
|---|----------|
| i. Executive Table (for the Employer) | : 1 No. |
| ii. Executive Chair (for the Employer) | : 1 No. |
| iii. Table (for Employer's approved Site Representative, Accountant, Head Clerk and Visitors) | : 6 Nos. |
| iv. Ordinary Chair Type I (for the Employer, Accountant, Head Clerk and Visitors) | : 3 Nos. |
| v. Table (for all other Staff) | : 2 Nos. |
| vi. Ordinary Chair Type II (for all other Staff and Visitors) | : 6 Nos. |
| vii. Steel Almirah 1980mm X 915mm X 485mm | : 1 No. |
| viii. Steel Almirah 1270mm X 765mm X 440mm | : 1 No. |
| ix. Racks – 5 Tier 1800mm X 900mm X 375mm made of Slotted Angles and M.S. Sheets | : 3 Nos. |
| x. Ceiling Fans – 1400mm size. Ceiling Fans shall be of Approved Make and Colour | : 3 Nos. |
| xi. Computer with Printer, Scanner
Core i5 – 650 Processor (4M CACHE, 3.20 GHZ) with 4GB DDR3 RAM,
Hard Disc Capacity 500 GB, 22X DVD Writer, 17" size TFT Colour Monitor,
HP / Laser Printer of 80 Columns, 104 Keyboard, Optical Mouse with
Mouse Pad and HP Scanner along with Broad Band Connection | : 2 Nos. |
| xii. Photo Copier | : 1 No. |

7.0 Field Laboratory

The Contractor shall provide and maintain adequately equipped NABL Accredited Laboratory own or associated with NABL Accredited firm as required for Site Control on the Quality of Material and the Works. It shall have a minimum of 40 Sqm Area. The Field Laboratory shall be located as directed by the Employer or his approved Representative. It shall be provided with Amenities like Water Supply, Electric Supply, etc. The Laboratory will have all Services, Furniture, Equipments, etc. Minimum of the following Items shall be provided in the Field Laboratory. Any Additional Items as required for Testing / Evaluation in line with the Standard Procedures and Codal Provisions shall also be provided.

7.1 General

- | | |
|---|-------------|
| i. Oven – Electricity Operated, Thermostatically Controlled, Range upto 200 ⁰ C, Sensitivity 1 ⁰ C | 1 No. |
| ii. Plat form balance 300 kg capacity | 1 No. |
| iii. Balance 20 kg Capacity – Self Indicating Type | 1 No. |
| iv. Electronic Balance 5kg Capacity – accuracy 0.5 gm | 1 No. |
| v. Water Bath – Electrically Operated and Thermostatically Controlled with Adjustable Shelves, Sensitivity 10 ⁰ C | 1 No. |
| vi. Thermometers | 4 Nos. each |
| a. Mercury – in – Glass Thermometer ranges 0 to 250 ⁰ C | |
| b. Mercury – in – Steel Thermometer with 30 cm Stem, ranges up to 300 ⁰ C | |
| vii. Glass Wares, Spatulas, Wire Gauzes, Steel Scales, Measuring Tape, Casseroles, Pans, Enameled Trays of Assorted Sizes, Pestle Mortar Porcelain Dishes, Gunny Bags, Plastic Bags, Chemicals, Digging Tools like Pickaxes, Shovels, etc. | As Required |
| viii. Set of IS Sieves with Lid and Pans 450mm Diameter with Sizes of 63 mm, 53mm, 37.5mm 26.5mm, 13.2mm, 9.5mm 6.7mm and 4.75mm 200 mm Diameter of Sizes 2.36 mm, 2mm, 1.18 mm, 600 micron, 425 micron, 300 micron, 150 micron and 75 micron | 1 Set |
| ix. Water Testing Kit for pH, SO ₃ and Cl | 1 Set |
| x. First Aid Box | 1 Set |

7.2 For Soils and Aggregates

- | | |
|---|-------|
| i. Rifle Box | 1 No. |
| ii. Atterberg's Limits (Liquid and Plastic Limits) Determination Apparatus | 1 Set |
| iii. Compaction Test Equipment both 2.5 kg and 4.5 kg Rammers (Light and Heavy Compact Efforts) | 1 Set |
| iv. Dry Bulk Density Test Apparatus (Sand Pouring Cylinder, Tray, Can, etc.) complete | 1 Set |
| v. Speedy Moisture Meter complete with Chemicals | 1 Set |
| vi. Posthole Auger with Extensions | 1 Set |
| vii. Core Cutter Apparatus complete with Dolly, Rammer, etc. | 1 Set |
| viii. Flakiness and Elongation Test Gauges | 1 Set |
| ix. Standard Measures of 30, 15 and 3 litres Capacity along with Standard Tamping Rod | 1 Set |

7.3 For Cement and Cement Concrete

- | | |
|--|---------|
| i. Slump Test Apparatus | 1 Set |
| ii. Compression and Flexural Strength Testing Machine of 200T Capacity with Additional Diameter for Flexural Testing | 1 Set |
| iii. Cube Moulds for Concrete Tests | 40 Nos. |
| iv. Surface Moisture and Density Meter for Soil, Aggregate and Concrete | 1 No. |

8.0 Casting Yard

The Contractor shall make his own Arrangements for the Construction and Maintenance of Casting Yard required for the Work. The Quoted Rate shall be deemed to be inclusive of the Element of Cost towards the above.

9.0 Disputes

In case of Disputes arising between the Contractor and the Authority approving the Designs, the matter may be referred to the Chief Commissioner, BBMP. The Decision of the Chief Commissioner, BBMP shall be Final and Binding on the Contractor.

10.0 Maintenance after Defect liability period.

The maintenance is routine maintenance relatively with short-life –spans such as, wearing course, Expansion joints, paint, etc. During Maintenance period ensure the continued safety of road users. It excludes any work leading to improvement of the structures, whether by strengthening to carry heavier loads by widening or by vertical realignment of the road surface. The maintenance operation begins with the opening of the bridge to traffic. In fact, bridge member starts ageing the day its concrete is poured. It excludes repairs of any damage caused by exceptional causes like landslides, earthquakes, cyclones, fire, etc., but it includes preventive maintenance.

Maintenance of bridge structures includes washing, painting, scraping and patching of curbs, rails, deck joints, concrete and steel bridge components like keeping areas around bearings shall be kept free of debris, dust, oil / grease etc., Replacing all the loose rivets by sound rivets, Observing Cracks in steel works and taking preventive measures to arrest the propagation. Observing Corrosion and action for its prevention. Protective Coatings by painting. Maintenance painting of metallised girders. Maintenance of welded girders. Observation on Detachment of Concrete Deck Slab from Steel girder and Taking Preventive Measures. Drainage system shall be thoroughly cleaned and repaired as necessary before the onset of monsoon. Protective surface coat, where provided, shall be maintained. Cleaning to be done with hand and power tools, such as a high-pressure wash. Washing removes water-soluble surface contaminants, existing coatings, rust and oil and grease and care must be taken with the disposal of wash water and debris. Severely corroded areas of a bridge will need abrasive spot blasting and priming before painting. Maintenance work on at grade road within the project battery limit is excluded during the maintenance period.

The tender amount is inclusive of maintenance cost and no separate payment shall be paid.

For routine maintenance of steel bridge components, refer Indian Railways Bridge Manual-1998

SECTION 7: CONTRACT DATA

Items Marked "N/A" do not apply in this Contract.

The following Documents are also part of the Contract.

Clause Reference of General Conditions of Contract

1.1 The Employer:

Address:

The Chief Commissioner

Bruhat Bangalore Mahanagara Palike

N. R. Square

Bangalore – 560 002

Name of Authorized Representative:

Executive Engineer (RI), East Division

18th Floor, Netaji Subashchandra Bose Building,

M.G. Road, Bengaluru – 560001,

Email: rieastdivisionbbmp@gmail.com

1.1 The Name and Identification Number of the Contract:

“Construction of Elevated Rotary Flyover at IOC Junction and Construction of additional 2 Lane ROB at Baiyyappanahalli Railway Level Crossing” on Lumpsum, Turnkey with allowable Price Escalation basis.

The “**Scope of Work**” is detailed in Section 6.

1.1 The Start Date shall be the **Date of Issue of Notice to Proceed with the Work.**

1.1 The project corridor is located about 13 km east of Bangalore Railway Station Bangalore city at Byapanahalli Main road straight. This junction operates Major link between Byappanahalli main roads to kammanahalli Main road through Indian Oil Depot and crossing the railway track at IOC Junction also connects Old Madras road (Indhiranagara) as well as Marathi sevanagar city. Old madras road is close to Byappanahalli Railway station and by construction of Elevated rotary flyover at IOC junction and Road Over Bridge at LC No:136A will connect NH-4 & NH-7 at Hebbal Junction, which leads to Kempegowda International National Airport. The Project Corridor is defined in the **Key Plan** given in Section 6.

The Intended Completion Date for the whole of the Works is 36 Months with the following milestones [17, 26]

Milestone dates:

Physical works to be completed Period from the date of issue of Notice to proceed with the work in the following Table.

Mail stones	Physical Work to be completed	Duration (Months)	Amount of Progress (Cr)	Percentage of Progress
Mail stone -1	Mobilization of Plant, Equipment, Site office. Labour Camp ,Studies / Investigations / Surveys Preparation/Finalization of GAD, dismantling of existing structures etc.,	2	12.96	4%
Mail stone-2	Drawings approval: Geotechnical Investigation,Preparation of drawing, Review, Modifications (if required) submissions and approval of GAD to railway department . Obtaining of approval to GAD from Railway Department, getting approval from BBMP to start the work,finalisation of traffic diversion, Demolition of existing ROB at IOC ,and marking of foundation etc.,	8	20.16	7%
Mail stone-3	Marking Foundation: Site clearance and Dismantling.Setting out of PUP, Elevated Rotary and Road Over Bridge at LC No 136A with approaches and Establishment of Bench Mark, Preparation & submission of structural design & detailed drawings for foundation of Pier/Abutment, getting proof checked by IIT/NITApproval of working Drawings and Designs.	3	17.99	6%
Mail stone-4	Foundation-Substructure : Precasting of PUP Segments, Construction of PUP, Foundation of Elevated Rotary and approach sections,Foundation of Road Over Bridge with approach section at LC No 136A: Substructure of Elevated Rotary and approach sections,substructure of Road Over Bridge with approach section at LC No 136A:	9	43.03	14%
Mail stone-5	Substructure Super structure : of obligatory and viaduct approaches to Rotary & ROB Flyover :	8	105.32	35%
Mail stone-6	Approaches to PUP with Rt wall and RCC steps, Approach of solid ramps for Elevated Rotary Flyover:Approach solid Ramp for Road Over Bridge at LC NO 136A:	2	33.58	11%
Mail stone-7	At grade Service Roads including Junction improvements: At all sides of Approaches to Elevated Rotary Flyover at Grade road :Towards Baiyappanahalli Railway station to Old Madras Road :	1	35.01	12%
Mail stone-8	Art Grade/elevated Battery limits, Finishing and Electrical works.:	2	19.02	6%
Mail stone-9	Over all Finishing on Completion & Maintenance:	1	16.99	6%
	Total Contract Period	36	304.06	100%

3. Insurance Requirements are as under.

	Type of Cover	Minimum cover for Insurance for 12 months
(i)	Works and of Plant and Materials	The Sum stated in the Agreement plus 20%
(ii)	Loss or damage to equipment	Full Replacement Cost
(iii)	Loss or damage to property of Third Party	Full Replacement Cost
(iv)	Personal Injury or Death Insurance (a) for Third Party (b) for Contractor's Employees or Labour	Rs. 20.00 Lakh to cover 4 Persons @ Rs. 5.00 Lakh each. In accordance with the Statutory Requirements Applicable to Karnataka.

PRICE ADJUSTMENT CONDITIONS; Applicable as per Government Order No: 791 Exp-12/2015, Bangalore, dated 26.02.2016 [40]

R= Value of work as defined in Clause 40.1 of Conditions of Contract.

Quarter for base price index for all the component means: Three consecutive calendar months preceding the calendar month of opening the Tenders

ADJUSTMENT FOR CEMENT COMPONENT

- (i) Price adjustment for increase or decrease in the cost of cement component procured by the contractor shall be paid in accordance with the following formula.

$$V_C = 0.85 \times P_C / 100 \times R \times (C_i - C_o) / C_o, \text{ Where,}$$

V_C = Increase or decrease in the cost of the work during the quarter under consideration due to changes in the rates for cement;

C_o = The all India average wholesale price index for cement (Ordinary Portland Cement) for the quarter means three consecutive calendar months preceding the calendar month of opening the Tenders as published by the Office of Economic Advisor, Ministry of Commerce and Industry, Government of India, New Delhi;

C_i = The all India average wholesale price index for cement (Ordinary Portland Cement) for the quarter under consideration as published by the Office of Economic Advisor, Ministry of Commerce and Industry, Government of India, New Delhi

P_C = Percentage of cement component of the work

ADJUSTMENT FOR STEEL COMPONENT:

- (ii) Price adjustment for increase or decrease in the cost of steel procured by the contractor shall be paid in accordance with the following formula.

$$V_S = 0.85 \times P_S / 100 \times R \times (S_i - S_o) / S_o, \text{ where,}$$

V_S = Increase or decrease in the cost of work during the quarter under consideration due to changes in the rates for steel;

S_o = The all India average wholesale price index for steel (TMT-TOR) for the quarter means three consecutive calendar months preceding the calendar month of opening the Tenders as published by the Office of Economic Advisor, Ministry of Commerce and Industry, Government of India, New Delhi

S_i = The all India average wholesale price index for steel (TMT-TOR) for the quarter under consideration as published by the Office of Economic Advisor, Ministry of Commerce and Industry, New Delhi

P_S = Percentage of steel component of the work

Note: For the application of this clause, index of TMT-TOR has been chosen to represent steel group.

ADJUSTMENT OF BITUMEN COMPONENT:

- (iii) Price adjustment for increase or decrease in the cost of bitumen shall be paid in accordance with the following formula:

$$V_B = 0.85 \times P_B / 100 \times R \times (B_i - B_o) / B_o, \text{ Where}$$

V_B = Increase or decrease in the cost of work during the quarter under consideration due to changes in the rate for bitumen.

- B_o = The official retail price of bitumen at the IOC /HPCL/BPL or any other depot at nearest location of site on the day 30 days prior to the date of opening of Bids.
 B_i = The official retail price of bitumen at the IOC/HPCL/BPL or any other depot nearest location of site for the 15th day of the middle calendar month of the quarter under consideration.
 P_B = Percentage of bitumen component of the work.

ADJUSTMENT FOR LABOUR COMPONENT:

- (iv) Price adjustment for increase or decrease in the cost due to labour shall be paid in accordance with the following formula:

$$V_L = 0.85 \times P_L / 100 \times R \times (L_i - L_o) / L_o \text{ Where,}$$

V_L = Increase or decrease in the cost of work during the quarter under consideration due to changes in rates for local labour;

L_o = The average consumer price index for industrial workers for Bengaluru Centre for the quarter means Three consecutive calendar months preceding the calendar month of opening the Tenders as published by the Labour Bureau, Ministry of Labour, Government of India;

L_i = The average consumer price index for industrial workers for Bengaluru Centre for the quarter under consideration as published by Labour Bureau, Ministry of Labour, Government of India

P_L = Percentage of labour component of the work

ADJUSTMENT OF FUEL AND LUBRICANT COMPONENT:

- (v) Price adjustment for increase or decrease in cost of Fuel and Lubricants shall be paid in accordance with the following formula:

$$V_F = 0.85 \times P_F / 100 \times R \times (F_i - F_o) / F_o \text{ Where,}$$

V_F = Increase or decrease in the cost of work during the quarter under consideration due to changes in the rates for Fuel and Lubricants.

F_o = The official retail price of High Speed Diesel (HSD) at the IOC/HPCL/BPL or other consumer pump nearest to site on the day 30 days prior to the date of opening of Bids.

F_i = The official retail price of HSD at the IOC/HPCL/BPL or other consumer pump at IOC at nearest to site for the 15th day of the middle calendar month of the quarter under consideration.

P_F = Percentage of Fuel and Lubricant component of the work.

Note: For the application of this Clause the price of HSD has been chosen to represent the Fuel and Lubricant Group.

ADJUSTMENT FOR PLANT AND MACHINERY SPARES COMPONENT:

- (vi) Price adjustment for increase or decrease in the cost of plant and machinery spares procured by the contractor shall be paid in accordance with the following formula:

$$V_p = 0.85 \times P_p / 100 \times R \times (P_i - P_o) / P_o \text{ Where}$$

V_p = Increase or decrease in the cost of work during the quarter under consideration due to changes in the rates for plant and machinery spares.

P_o = The all India average wholesale price index for Heavy machinery and parts for the quarter means three consecutive calendar months preceding the calendar month of opening the Tenders as

published by the Office of the Economic Advisor, Ministry of Commerce and Industry, Government of India, New Delhi

P_i = The all India average wholesale price index for Heavy machinery and parts for the quarter under consideration as published by the Office of the Economic Advisor, Ministry of Commerce and Industry, Government of India, New Delhi

P_p = Percentage of Plant and Machinery Spares component of the work.

Note: For the application of this Clause index of Heavy Machinery and Parts has been chosen to represent the Plant and Machinery Spares Group.

ADJUSTMENT FOR OTHER MATERIALS.:

- (vii) Price adjustment for increase or decrease in the cost of other materials other than cement, steel, bitumen and Fuel and Lubricants, procured by the contractor shall be paid in accordance with the following formula:

$V_M = 0.85 \times P_M / 100 \times R \times (M_i - M_o) / M_o$, Where

V_M = Increase or decrease in the cost of work during the quarter under consideration due to changes in the rates for local materials other than cement, steel, bitumen and Fuel and Lubricants.

M_o = The all India average wholesale price index for all commodities for the quarter means three consecutive calendar months preceding the calendar month of opening the Tenders as published by the Office of the Economic Advisor, Ministry of Commerce and Industry, Government of India, New Delhi

M_i = The all India average wholesale price index for all commodities for the quarter under consideration as published by the Office of the Economic Advisor, Ministry of Commerce and Industry, Government of India, New Delhi

P_M = Percentage of other material component (Other than cement, steel, bitumen and Fuel and Lubricants) of the work.

Note: For application of this clause, index of all commodities has been chosen to represent the Other materials.

The following percentages will govern the price adjustment for the entire contract

1. Labour – P_L	15%
2. Cement – P_C	15%
3. Steel – P_S	20 %
4. Bitumen – P_B	2 %
5. Fuel and Lubricants – P_F	10 %
6. Plant and Machinery Spares – P_p	15%
7. Other materials – P_M	<u>23%</u>
TOTAL	100 %

****Any discount in procurement of Bitumen, Fuel and Lubricant shall be to Client's account. Contractor shall have to submit copy of Invoices towards procurement of both Fuel & Lubricant duly signed by Engineer – In charge of Site and Client**

9.0 Schedule of Personnel to be deployed as below.

Sl. No	Position	Qualifications	Number of personnel
1	Project Manager	B.E. Civil + 15 Years minimum Construction experience (including 5 years as Project Manager on bridge works)	One
2	Dy Project Manager, Cum Bridge design engineer / Structural Engineers	BE (Civil) + 10 Years of which minimum 5 years' experience in design desirably Post graduate in Structural Engineering, (Min. 5 years in major Bridge Construction / Development Project.)	One
3	Bridge/Structural Engineer	BE Civil Desirably Masters in Bridge Engineer Min. 5years experience	Two
4	Geotechnical Engineer	BE Civil + 3 Years minimum experience Geotechnical /Foundation engineer	One
5	Highway Engineer	BE Civil + 2 Years minimum experience in Road construction	One
6	Plant & Equipment Engineer	B.E. (Mech.) + 5 Years minimum experience OR Diploma, Mech. + 10 years minimum experience in erection and commissioning of Pumps, Plant & Mechanical equipment's	One
7	Construction Engineers	B.E. Civil + 5 Years minimum Construction experience (5 years on Road and Building construction)	Four
8	Material / Quality Control Engineer	B.E Civil + 10 Years minimum experience (including 5 years in Infrastructure works as Material / QC Engineer)	One
9	Planning Engineer	B.E Civil + 10 Years minimum experience in MS Project.	One
10	Chief Surveyor	Diploma in Civil with 12 Years minimum experience.	Two
11	Laboratory Technician	D.C.E. + 5 years minimum experience in Road , Building and bridge Construction in Q.C. Laboratory	Two
12	Electrical Engineer	B.E (Elec) 10 years minimum experience in similar nature of electrical works.	One
13	Auto CADD Draftsman	Diploma Civil + 5 years minimum experience	Two
14	Accountant	B. Com + 10 years minimum experience in Infrastructure Projects	Two
15	Store Keeper	Graduate in any discipline + 10 years minimum experience in Infrastructure Project.	Two

25. The Methodology and Program of Construction: **10 Days from the Date of Entering into Agreement.**

25. The Schedule of Key and Critical Equipment to be deployed on the Work as per Agreed Program of Construction: **10 Days from the Date of Entering into Agreement.**

- 17, 26 The Intended Completion Date for the whole of the Works: **36 Months from the Start Date including Monsoon with the Milestones as detailed in Annexure D.**
31. The Defects Liability Period is **24 Months from the Date of the Physical Completion of the Work in all respects and on issuance of Completion Certificate by the Competent Authority.**
41. The Liquidated Damages for the whole of the Works are **0.1% of the Final Contract Price per day** for the whole Works.
41. The Maximum amount of Liquidated Damages for the whole of the Works: **10% of Final Contract Price.**

The liquidated damages for the whole of the works as per mail stone are mentioned in the below table.

Amount in Rs	Contract Value in Rs		3040602109	
Mail stone	No of Days Delay assumed	Penalty/day Rs	Total Amount of Penalty	Max Penalty 10% of Contract Value
M-1	10	3040602	30406021	304060211
M-2	10	3040602	30406021	
M-3	15	3040602	45609032	
M-4	15	3040602	45609032	
M-5	10	3040602	30406021	
M-6	10	3040602	30406021	
M-7	10	3040602	30406021	
M-8	10	3040602	30406021	
M-9	10	3040602	30406021	

42. The Amounts of the Advance Payment are

Nature of Advance	Amount (Rs.)	Conditions to be fulfilled
1. Mobilization	5% of the Contract Price	On submission of Unconditional Bank Guarantee. (To be drawn before end of 20% of Contract Period).

(The Advance Payment will be paid to the Contractor not later than 30 days after fulfillment of the above Conditions).

42. **Repayment of Advance Payment for Mobilization**
The Advance Payment shall be repaid with Percentage Deductions from the Interim Payments certified by the Employer's site Representative under the Contract in five (5) equal Installments. Deductions shall commence in the next Interim Payment Certificate following that in which the total of all such Payments to the Contractor has reached not less than 15% of the Contract Price, always provided that the Loan shall be completely repaid prior to the Expiry of the Original Time for Completion pursuant to Clauses 17 and 26.
48. The Date by which "As Built Drawings" (in scale **1:100**) in 6 Sets are required is **within 4 Weeks from the Date of Completion of Works.**

-
48. The Amount to be withheld for failing to supply “As Built Drawings” by the date required is **Rs. 1000000/- for every week Delay beyond the Stipulated Deadline.**
- 49.2 The following Events shall also be fundamental breach of the contract:
1. The Contractor has contravened Clause 9 of CC.
- 50.1 The Percentage to apply to the Value of the Work not completed representing the Employer’s Additional Cost for completing the Works shall be **30%.**

SECTION 8: SPECIFICATIONS

For Specifications, all the Relevant Sections of MoRT&H [Specifications for Road and Bridge Works (Latest Editions)], all the Relevant IRCs and Special Publications (Latest Edition) shall be referred from page no 100 to 218.

Specifications are uploaded in the kpp Portal.

SECTION 9: DRAWINGS

Drawings are uploaded in the kpp Portal.

SECTION 10: FINANCIAL BID

Financial Bid is uploaded in the kpp Portal.

Note:

1. Item for which no Rate or Price has been entered in will not be paid for by the Employer when executed and shall be deemed Covered by the other Rates and Prices in the Financial Bid (Refer ITT Clause 11.2 and CC Clause 37.2).
2. The Turnkey Price shall be quoted by the Tenderer in Indian Rupees.
3. Where there is a Discrepancy between the Price Quoted in Figures and Words, the lower of the two will govern [Refer ITT Clause 24.1(a)].

SECTION 11: FORMAT OF BANK GUARANTEE FOR PERFORMANCE SECURITY

To: _____ [Name of Employer]
_____ [Address of Employer]

WHEREAS _____ [Name and Address of Contractor] (hereinafter called "the Contractor") has undertaken, in pursuance of Contract No. _____ dated _____ to execute _____ [name of Contract and Brief Description of Works] (hereinafter called "the Contract");

AND WHEREAS it has been stipulated by you in the said Contract that the Contractor shall furnish you with a Bank Guarantee by a recognized Bank for the sum specified therein as Security for compliance with his Obligations in Accordance with the Contract.

AND WHEREAS we have agreed to give the Contractor such a Bank Guarantee.

NOW THEREFORE we hereby affirm that we are the Guarantor and responsible to you, on behalf of the Contractor, upto a total of Rs. _____ [Amount of Guarantee]² Rupees _____ [in words] and we undertake to pay you, upon your first written demand and without cavil or argument, any sum or sums within the limits of _____ [Amount of Guarantee]³ as aforesaid without your needing to prove or to show grounds or reasons for your demand for the sum specified therein.

We hereby waive the necessity of your demanding the said debt from the Contractor before presenting us with the demand.

We further agree that no change or addition to or other modification of the Terms of the Contract or of the Works to be performed there under or of any of the Contract Documents which may be made between you and the Contractor shall in any way release us from any Liability under this Guarantee, and we hereby waive Notice of any such Change, Addition or Modification.

This Guarantee shall be valid until 30 days from the Date of Expiry of the Maintenance Period of 24 months from the date of completion of contract work.

Signature and Seal of the Guarantor:

Name of Bank:

Address:

Date:

² An Amount shall be inserted by the Guarantor, representing the percentage of the Contract Price specified in the Contract.

³ An Amount shall be inserted by the Guarantor, representing the percentage of the Contract Price specified in the Contract.

GENERAL NOTES

1. The Financial Bid is to be read, for the purpose of pricing, in continuation with the Instructions to Tenderers, Conditions of Contract, Scope of Work, Design Criteria, Specifications, Drawings and all other Component Parts of the Tender Document.
2. The Contractor shall quote the Turnkey Offer for Investigation, Planning, Designing, Construction, Testing and Commissioning, etc. for “Construction of Elevated Rotary Flyover at IOC Junction and Construction of additional 2 Lane ROB at Baiyappanahalli Railway Level Crossing” on Lumpsum, Turnkey with allowable Price Escalation basis.
3. quoted shall be for the entire Scope of Work with all General Risks, Liabilities and Obligations set forth or implied in the Document on which the Tender is to be based. Variation in Quantities due to Site Requirement does not entail a Contractor for any revision in the Quoted Offer.
4. The **Turnkey Offer** shall include Cost of all Materials (including Cost of Cement, Reinforcement Steel, Explosives, etc.), Plant, Labour, Equipment, Lighting, Conveyance, Tree Transplantation, Rainwater Harvesting , Providing and Maintaining Communication Facilities, etc., all Leads and Lifts for various Components of Elevated Rotary with Steel Box Girder apart from additional supports to ensure the stability of steel box girder, Pedestrian Underpass, Rail Over Bridge at LC 136A with composite I Girder , Ramps /Approaches with PSC I girder , Surface Level Roads including Regrading / Resurfacing / Widening of Surface Level Roads, Improvements to Carriageway, Drainage Facilities, Illumination, Footpath, Cross Drainage Works, Painting, Providing Over Head Gantry, Providing Traffic Signals and Signages, Road Marking, etc. under all Conditions of Site, Weather, etc. as specified in **Volume I**. The Amount offered shall be Final and no claim whatsoever on any account shall be entertained.
5. The **Turnkey Offer** shall be inclusive of all Taxes (Excluding GST), Duties and Levies including Sales Tax, Service Tax, Municipal Taxes, Local Taxes, Octroi, ESI, all Royalties, Patent Rights, other Incidental Charges, etc.

The Contractor shall quote his **Turnkey Offer** by taking into consideration the Minimum Cement Content specified in **Volume I** of this Tender Document.

The Contractor shall absorb the Cost in case of any necessity of Cement Content required to be adopted being above the Upper Limits specified. No Compensation will be paid on Account of Variation in the Quantity of Cement beyond the Range specified and also the Contractor will not be compensated for any Variation in Cement Content as a Result of Variation in Gradation of Fine and Coarse Aggregates.

6. All Items shall be executed as per the Tenderer own design approved Designs and Drawings and shall comply with the Specifications, Conditions of Contract, Design Criteria of the Tender Document and Orders conveyed by the Employer or his Representative from time to time during the Course of Execution. If there are any Items in Contract Proposals, which is not specified in **Volume I**, shall comply with the Specifications specified in relevant IRC and BIS Codes, MoRT&H.
7. The **Turnkey Offer** quoted shall include Clearance of Site both Prior to Commencement of Work and after its Completion.
8. The Contractor shall specifically note that the **Turnkey Offer** quoted shall be inclusive of all Dewatering and Desilting necessary for completing the Works. No Separate Payment shall be made towards Dewatering and Desilting.
9. Where there is a Discrepancy between the Price Quoted in Figures and Words, the Lower of the two will govern.

10. Disposing of all the Disused Materials shall be the Responsibility of the Contractor.
11. The **Turnkey Offer** quoted shall include all Safety and Precautionary Measures to be followed at Site during the Course of the Execution.

Form of Financial Bid

Description of the Works: **“Construction of Elevated Rotary Flyover at IOC Junction and Construction of additional 2 Lane ROB at Baiyyappanahalli Railway Level Crossing” on Lumpsum, Turnkey with allowable Price Escalation basis.**

To,

The Executive Engineer (RI)
18th Floor, Netaji Subashchandra Bose Building,
M.G. Road, Bengaluru – 560001,
Email: rieastdivisionbbmp@gmail.com

Dear Sir,

We _____ offer to construct and maintain during the Defects Liability Period and Maintenance Period the Works described above in accordance with the Terms and Conditions, Scope of Work, Conditions of Contract accompanying this Tender for the Turnkey Contract Price as indicated in **Schedule A**.

This Tender and your Written Acceptance of it shall constitute a Binding Contract between us. We understand that you are not bound to accept the lowest or any Tender you receive.

We undertake that, in competing for (and, if the award is made to us, in executing) the above Contract, we will strictly observe the Laws against Fraud and Corruption in Force in India namely “Prevention of Corruption Act 1988”.

We hereby confirm that this Tender complies with the Tender Validity and Earnest Money Deposit required by the Tender Documents.

We attach herewith our Current Income Tax Clearance Certificate.

Yours faithfully

Authorized Signature:

Name and Title of Signatory:

Name of Tenderer:

Address:

Schedule A

Sl. No.	Description of Work	Amount in Figures ¹	Amount in Letters ¹
1.	A. Construction of Four Lanes Elevated Rotary at IOC railway junction with Steel Box Girder and approaches to all the four directional flow of traffic, including approaches (up to ITC Limited from Rotary for a length of 1.50 km) and Construction of Pedestrian Underpass complete as per concept drawings enclosed in Tender drawings. B. Construction of two lanes ROB in lieu of LC NO: 136A at KM 345/800-900 between Bengaluru cantonment and Byyapanahalli Railway stations with obligatory span of 2 x 35.0M clear composite Girder with both side approaches. Down ramp towards Byappanahalli station on LHS of existing ROB and other side approach towards Old Madras Road with up ramp to facilitate the flow of traffic in unidirectional as per concept drawings enclosed in Tender drawings. C. Construction of at grade Road from Battery limits of approaches to Elevated rotary from all the four side approaches, including improvements of Byyapanahalli railway station roads to Old madras road NH 7 Junction.		
	TOTAL		

¹ To be filled in by the Tenderer, together with his Particulars and Date of Submission at the Bottom of the Form of Tender.